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HINTS
FOR THE EXAMINATION
OF
MEDICAL WITNESSES.

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M.DCCC.XXIX.

TO
THE BENCH, THE BAR, AND THE
LEGAL PROFESSION
OF ENGLAND IN GENERAL,
THE FOLLOWING PAGES
ARE MOST RESPECTFULLY DEDICATED,
BY THEIR OBEDIENT SERVANT
AND OCCASIONAL ASSISTANT,
THE AUTHOR.

London, June 1, 1829.

PREFACE.

I HAVE ventured on this little publication chiefly because I have heard complaints of the inconvenient size of my former works. Lawyers, when they go the circuits, must diminish their luggage as much as possible. Having served as an officer in some of the most active scenes of campaigning, I am aware that, on a journey, books and brick-bats are almost equally objectionable, if we carry them in our portmanteaus. Therefore, it may be truly said, under such circumstances,

μεγα βιβλιον, μεγα κακον.

The “Hints” are exclusively addressed to those whose duty it is *to question* medical

witnesses in courts of justice : the parties required *to give the information* must have recourse to other sources of instruction -- to my own more voluminous writings, for example ; which have been stated by good judges to be “ *the best British authority.*”*

The most important HINT of all deserves to be introduced in this conspicuous place. No medical witness should be allowed to give his evidence on points comprehended in the scope of this volume, without being asked, WHETHER HE HAS STUDIED MEDICAL JURISPRUDENCE ? And, should he answer in the negative, his opinion of the utility and importance of the study ought to be demanded.

* Edinburgh Medical and Surgical Journal.

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HINTS,

ETC.

THE knowledge required for the acquisition of the art of healing diseases is varied and extensive; and the aggregate is, in ordinary language, denominated MEDICINE. Recourse is often had to this knowledge for the purpose of assisting judiciary inquiry, by calling its professors into the public courts; and this interesting part of their business is denominated *Forensic Medicine* — itself an important application of all that concerns or constitutes the healing art; and a branch of MEDICAL JURISPRUDENCE, which, besides *Forensic* or *Judiciary* medicine, comprehends the important study of *Medical Police*.

By referring to the subsequent pages — in which it has been our endeavour to introduce every question of real importance to the interests of justice — those whose duty it may be to examine medical

witnesses, will, it is hoped, derive considerable assistance; but in order to answer such questions in a creditable and satisfactory manner, medical men must, of course, extend their researches beyond the narrow limits to which we are here confined. It is their business to instruct the court; and on matters within their province it is not supposed that judges, counsel, and jurymen, possess particular information; while to be able to put proper questions, is, perhaps, more necessary than for parties to be able to answer them. To be so, however, is an indubitable part of every medical man's duty.

The subjects belonging to *Forensic Medicine* resolve themselves into two divisions as relates to their physiological import — those that concern the living system, and those that relate to the dead body. On the present occasion we shall not adhere to this distinction, but endeavour to class the topics as they present themselves in the form of *Criminal* or *Civil* process, the latter including certain questions that belong to the business of the *Ecclesiastical Courts*.

IN THE CRIMINAL COURTS

are tried all issues arising out of offence done to the person, which interest the state or public, and subject the accused, when convicted, to personal punishment — to the penalty for the most part of

death. We may enumerate the following as the topics to which attention ought here to be directed: —

Homicide,
Child Murder,
Abortion,
Rape.

HOMICIDE may, with tolerable accuracy, be referred to one of the three following causes — as all specific or particular methods of committing it, which are likely to bring parties to the bar of a public tribunal, are referrible to one of these : —

Poisoning,
Suffocation,
Wounds, and other mechanical violence.

HOMICIDE BY POISON.

Although the list of substances known to exert a deleterious power over the living system is undoubtedly very great, and the full investigation of the subject now forms a distinct science, termed *Toxicology*, there are many which may be unnoticed here — either because they are never seen in this state of action, except through peculiarities of the person's constitution, and mistakes in their

administration as remedies;* or because they are matters of pure accident, and are never accompanied by circumstances that substantiate criminal imputations. In this last way they may attract the notice of coroners' inquests, more *pro formâ* than under any idea of ulterior proceedings, and they certainly may there involve a necessity for examining medical witnesses; but examinations of this nature are limited in their object, which is, for the most part, perfectly well understood.

Authors who have written at length on poisons, have found it necessary to discuss the question of their arrangement and classification. The most prevalent method adopted seems to have been one founded on their powers and action on the living system:† we think, however, that it may be equally, if not more convenient, to refer them, on the present occasion, to the kingdom of nature whence they are derived: in this way, we shall have to select them from among *Animal*, *Vegetable*, and *Mineral* products; and in so doing let us reverse the order here quoted.

* It may be laid down as a doctrine, which hardly admits of an exception, that all medicines may be converted into poison, while the converse is nearly equally true; for there is hardly a poison which does not possess therapeutic, or healing powers. In fact, the list of the *materia medica* is almost identically that of the *m. toxica*.

† Thus, poisons have been treated of as *corrosive*, *irritating*, *acrid*, *stupefying*, *putrefying*, &c.

MINERAL POISONS.

These are *Metals, Acids, Alkalies, Earths, Neutral Salts*, and one or two other substances.

METALLIC POISONS.

Two of these have been for a long period a source of interest and perplexity both to lawyers and physicians, inasmuch as they have been long and universally known to possess the most virulent powers, and have been considered exceedingly difficult to detect.

Arsenic.—This is the proper name of one of the brittle metals; but it may here be remarked, once for all, that naked metals are not known to be poisons; consequently, *arsenic* in this form is not to be considered so.

It is the vulgar name, however, for a salt of which this metal is the basis—capable of destroying life, when administered in very minute quantity, and frequently resorted to for felonious purposes.

The common *arsenic* of the shops is an oxide of the metal in question; which exists in the form of a concrete white powder, resembling sugar in its external aspect, and liable to be mistaken for this, at first view. Sometimes it is found in semi-vitreous lumps; but in either form its solubility is not very great. To the taste it is acrid and corrosive, leaving

a degree of sweetness in the mouth, although its prominent characteristics are of an *acid* nature. In fact, it is with propriety denominated arsenious acid, although at a low degree of oxidation. To this article it will be sufficient to confine our attention; although there are other arsenical compounds which partake of the same poisonous properties, and are amenable to the same rules laid down with regard to arsenious acid, *white arsenic*, or the white oxide of arsenic.*

This white oxide of arsenic (or arsenious acid) is poisonous in very small quantity. A single grain cannot be swallowed with impunity; and two or three are sufficient to take away life. It is commonly administered, however, to a greater extent, which, together with its sparing solubility, ought greatly to facilitate the process of its detection. Perhaps this latter circumstance may also contribute to its effectual exhibition as a poison; for in the solid form a greater quantity may pass the palate undiscovered by the person who takes it; and there are instances on record of arsenic to a large amount having been retained in the stomach and proving fatal, without producing any great degree of uneasiness.

A peculiar characteristic of this substance is, that

* There are also a black oxide, the arsenic acid, and two sulphurets, or combinations of the metal with sulphur, familiarly known by the names of *orpiment* (the yellow), and *realgar* (or the red).

when thrown on red-hot coals it is sublimed into a dense white vapour, which emits a powerful garlic smell; and the knowledge of this fact greatly facilitates its detection; for although it be the *metallic* arsenic which furnishes these phenomena, and there are other metals which are volatilised by heat,* the smell in question is characteristic.

The symptoms of poisoning by arsenic have been divided into three degrees, which, for medical purposes (of treatment), may be convenient; but where they are of the mildest, or primary degree, moral evidence alone can elucidate the fact; in the second, or medium degree, they differ chiefly in intensity from the highest, which is that we ought here to direct attention to, and which may be described as follows:—

Soon after swallowing a palpable quantity of arsenical poison, a sense of heat and constriction is perceived in the fauces and œsophagus (or gullet), accompanied with excruciating pains in the stomach and bowels; vomiting takes place, of a brown, and not unfrequently of a bloody matter; anxiety;† faintings; diarrhœa; intense thirst; heat of the

* Viz. mercury, zinc, &c. But these cannot possibly be mistaken for arsenic, even under similar circumstances, by those who are acquainted with the ordinary characters of these metals, as every medical jurist ought to be.

† This is a term in medicine used to denote a painful sensation about the diaphragm.

surface: the pulse becomes small, frequent, and irregular; palpitation of the heart comes on; cramp of the muscles; strangury (a suppression of urine); and sometimes a bloody and painful discharge from the bladder. Towards the conclusion of these sufferings cold sweats break out; the countenance exhibits a peculiar aspect of distress; a livid circle forms round the eyes; and the patient commonly dies in perfect possession of his intellectual faculties.*

On opening the bodies of those who die in consequence of taking this poison, the chief appearances are the following:—

The stomach and intestines, more especially the upper and *lower* (seldom the intermediate portion), display marks of inflammation; the villous, or inner coat of the stomach is sometimes reduced to a pulpy state, and can then be scraped off with the finger-nail; sometimes the whole coats of this viscus are perforated through,† and ulcerations are found, as

* The eruption on the skin, generally enumerated along with these symptoms, is not constant where the course of matters is so rapid and severe.

† It should be kept in mind, that the stomach, in certain other cases, exhibits appearances which might, upon a superficial inspection, be confounded with these. Persons dying suddenly *in a state of health* (as, for example, suicides, and felons who have undergone the capital sentence of the law), have exhibited the very interesting phenomena of the stomach acting on itself after death, in such a manner as to give the appearance of inflammatory alteration—redness, and even

an approach to this extreme result. Bloody exudations on the inner surface may present themselves, and ought not to be confounded with marks of inflammation. Sometimes there is a general thickening of the coats of the stomach; and other appearances in various parts of the body have been described as the effect of this poison, which should rather be attributed to it in common with other causes of violent excitation and disorder of the general system. Thus, we discourage the propensity to attach importance of a peculiar or characteristic nature to general swelling of the body, froth in the mouth, lividities of the thorax, face, &c. protrusion of the tongue, congestions of the brain, lungs, and other organs; for these are no more connected with arsenical poison, or poison, perhaps, of any description, than as (in point of fact) they may be with violent death, under whatever circumstances.

In proceeding to the great object of the medical jurist, viz. the detection of the deleterious article, we may remark—that an accurate observation of the symptoms of the case, during the life of the sufferer, and of the appearances in the body after death, were either peculiar to particular poisons, might be

perforations, being occasionally found. The medical practitioner ought to be able to distinguish the effects of corrosive poison from those of *digestio in se*.

of considerable assistance in forming an opinion; but in regard to *arsenic*, it must be admitted, that there is at least one disease whose course very closely resembles that traced above, and which may leave alterations in the state and appearance of the viscera, which it might be possible to confound with the effects of poison — we allude more particularly to *cholera*. Where an *antidote* (a remedy which counteracts the influence of any particular poison) is *successfully* employed, we must admit that the circumstance ought to strengthen our persuasion of its identity; but symptoms, morbid appearances, and antidotes, can hold but a subordinate rank in the scale of proofs for *judiciary* satisfaction.

For the poison now under consideration there exists no antidote — no specific or peculiar remedy. The evacuation of the stomach by the readiest means,* and a course of subsequent treatment, analogous to that appropriate to inflammatory disorders of the bowels, must be had recourse to,

* These means are, in one word, *mechanical*. To describe and recommend the *stomach-pump*, as it is called, is not our business; nor is it necessary. The practitioner who would now run the hazard attendant on the previous trial of other means, would deserve severe reprehension; and the medical witness who should be reduced to the necessity of avowing, in a court of justice, that (where practicable) such means had not been resorted to, would deserve something worse than pity, and would probably meet with something more injurious than contempt.

according to circumstances, and the judgment of the practitioner.

On the subject of the DETECTION of *Arsenic*, too much, perhaps, has been written; at all events the fault in practice has been (where the right course has been at all taken) to *attempt*, and *fail in*, too much. An undue share of importance has been attached to certain processes, which are, in fact, but steps towards a conclusive verification. In conducting these processes, medical men have given themselves a vast deal of trouble, incurred no small share of blame, and often completely spoiled a promising advance towards the truth, from want of dexterity, as well as minute knowledge.

No medical proof of the administration of *arsenical* poison ought to be received in a court of justice short of the *reduction*, or reproduction, of the naked metal, from whatever substance, liquid or solid, which is suspected to have contained it; whether that substance be the remains of what the party poisoned had swallowed, the contents of the stomach rejected by vomiting, the contents remaining in that viscus and in the smaller intestines after death, or in portions of these organs whose structure has been altered by the action of the supposed poison, or in other parts of the body; for arsenic may be absorbed, and carried to remote parts of the system. And here it may be proper to mention, that sometimes a person may die from arsenical poison, and not a trace

of it remain either in the contents of the *primæ viæ*,* or be discoverable in any alteration of their structure.

The reduction or reproduction of metallic arsenic may be readily effected where the proportion of the poison to the bulk of the substance examined does not exceed three-fourths of a grain; and there are tests which, for mere *chemical* satisfaction, will shew its presence where the proportion does not amount to more than $\frac{1}{100,000}$ part of a grain.

The subject of *tests* must not, however, be passed over altogether in silence. It is necessary that the most celebrated and least capricious should be pointed out, together with their results, as these were relied upon at no distant period, and may still be taken into account in the process of detection.

The principle of their operation is deduced from the doctrine of chemical affinities; for a solution of the metallic salt being the basis, other saline bodies are added to it for the purpose of securing a double elective attraction, and of forming new chemical compounds, the changes of appearance produced by which have been considered characteristic of the presence of arsenic. We do not mean to insinuate that, in point of fact, it is not so; but as various, and by no means frivolous objections have been brought against these changes or appear-

* *Primæ viæ*—literally, *first passages*.

ances, it would be too much to expect that unprofessional men should be able to satisfy themselves on so important a point, under a conflict of opinions. These operations, therefore, we think we do an acceptable service to all parties by reducing to a subordinate and contributory rank; while, at the same time, by not rejecting them entirely, we both respect the resources of scientific knowledge, and enlarge those of the professional witness.

We shall quote *Nitrate of Silver*, *Sulphate of Copper*, *Lime-water*, and *Sulphuretted Hydrogen*, as the most convenient, accessible, and satisfactory of the re-active tests of the presence of arsenic in a dissolved or liquid form: how to prove its identity when detected in the shape of solid particles will require no instruction, or all that may be necessary will be inferred from the course to which the employment of these re-agents ought to lead.

It is necessary to premise, 1st, that in most cases, the vehicle in which the poison is contained will be neither transparent nor colourless; while the results of the experiments in question have been established from the phenomena exhibited in clear, watery solutions; consequently it will be necessary to filter and decolorise before adding the test; but, after all, a tinge may remain of itself sufficient to prevent very accurate inferences: 2dly, the chemical reactions will not be secured without the addition of an alkali to the suspected liquid; consequently it

is customary to add potass, which, combining with the acid, forms an arsenite, that both facilitates the operation, and does not interfere with the accuracy of the results : 3dly, the evidence of a medical man, who has not *rehearsed* the processes for the detection of poisons generally, and of arsenic in particular, ought to be rejected ; for if he applies himself to a real case of poisoning, for the first time that his attention has been turned practically to the subject, he will most certainly blunder in the process, and draw conclusions (to say the least of them) of a hazardous nature.

With regard to the second observation, the necessity of adding a fixed alkali to the suspected solution will be obviated, where the experimenter employs the ammoniated preparation of the two first-named tests.

But whether he add the *nitrate of silver* to an arsenite of potass, or the ammoniuret of silver to arsenious acid, the result ought to be a copious precipitate of a yellow colour, consisting of an arsenite of silver ; but were he to rest here, he would be justly exposed to the difficult and unsatisfactory duty of shewing that similar precipitates, produced by the addition of the nitrate of silver to other solutions, as, for example, of the alkaline phosphates, are not the same. We know that they are not so, and that there are methods of performing this experiment by which great part of the objection may

be got rid of; but, after all, it would not be satisfactory to rest the issue upon it.

Sulphate of Copper throws down a precipitate of a grass-green colour, which has a characteristic appearance, both as to form and rapidity of formation: it is an arsenite of copper.

Lime-water, when employed, should be recently prepared, warm, and in copious quantity: it will thus produce a dense, white precipitate, consisting of the arsenite of lime.

If a stream of *sulphuretted hydrogen gas* be directed through a liquid containing arsenic, even in very minute quantity, the product will be a sulphuret, of a golden yellow colour, which will cloud the fluid, and fall to the bottom of the vessel. The hydro-sulphurets will act in a similar manner; but the results are not so satisfactory.

To these, if the experimenter be zealous enough, may be added other tests;* though we apprehend that the proper application of those we have now mentioned will be found sufficient, as the products obtained by their employment must be separated and subjected to another. The precipitates to which we have alluded are to be removed from the fluids, and, being first carefully dried, are to be treated in

* As, for example, the chromate of potash, iodine, the tombac alloy, &c.; for details on the application of which, Orfila's or Smith's Toxicology may be consulted.

the following manner:—Let each, or the whole, mixed together (for it is a mistake to suppose that such admixture can affect the result) be rubbed in a glass or agate mortar with three times its weight of *black flux*,* and then be introduced into a small glass tube hermetically sealed at one end,† but left open at the other, and (in a way which every chemist understands, and every medical man *ought to* understand) exposed to heat. If this be rightly done, a metallic incrustation will be formed upon the inner surface of the glass, which no practised eye can confound with any lustre arising from the glaze or vitrification of charcoal. But to render the proof conclusive, let this metal be scraped off, or pounded with the portion of the tube to which it adheres, and then exposed to the action of red-hot coals or iron; the result will be the elevation of the white smoke, and the emission of the garlic smell.

The aid of galvanism may be resorted to for the revivification of metals, under most, if not all circumstances of composition and admixture. Upon this principle, recourse has been had to the

* Other substances are spoken of as fit for the purpose; but this is the one to which preference is accorded by the best authorities.

† The sealed end of the tube (where the quantity of material is exceedingly small) may be so modified by the operator as to facilitate the operation. Vide *Smith, Forensic Medicine*, 3d ed. Appendix.

agency of the voltaic battery in the verification of arsenic. If the pile be sufficiently strong, a deposition of metallic arsenic will take place on the negative wire; but this may be dubious, or imperceptible to the naked eye, if the quantity of arsenic contained in the solution be very small. In all cases, however, as a proper corroborative of the accuracy of the test, the wire in question should be exposed to vivid heat, when, if it is coated even slightly with arsenic, we shall raise the garlic odour.

Corrosive Sublimate is so called, in ordinary language, partly on account of its manner of production, and partly from the nature of its action on the living system. It is a muriate, or (to speak with greater chemical accuracy) a chloride of mercury, at the maximum degree of oxidation, whereby it is distinguished from calomel, the minor or milder chloride,—a substance well known in medical practice.

It is generally presented in a crystalline mass, rather opaque, and pulverulent on the surface. It is soluble in eleven times its weight of cold, but in three parts only of boiling water. If thrown on red-hot coals it will give out a thick white smoke, which is irritating and pungent, but not characterised by the smell distinctive of arsenic. It has an extremely acrid and highly repugnant taste, which leaves a sense of constriction in the throat.

Mercury possesses a specific power of affecting the system, and has long been one of the most active articles of the *Materia Medica*. All its compounds exert this power,—some with more activity than others; but the chloride, oxy-muriate, or *corrosive sublimate* (the article under notice), in the most eminent degree. It is the basis of many active empirical remedies; but in its employment requires great caution, and to be administered in very minute quantity. From half, or a quarter of a grain upwards, may be considered a *dangerous* dose; but it is not so often employed, or so easily administered, as the last-mentioned article, as its solubility is greater, and the chances are thereby multiplied of its being rendered perceptible to the palate. Its taste is so highly repugnant, that any large quantity could hardly, perhaps, be swallowed.

When taken to a palpable amount, the principal symptoms are the following:—An acrid metallic taste in the mouth, with a sense of heat and constriction in the fauces and œsophagus; great pain in the stomach, extending to the intestines, and anxiety; sickness; severe vomiting, sometimes of bloody matter; diarrhœa or dysentery; cold sweats; cramps; faintings; great debility; a small, tight, and frequent pulse; convulsions, and death. If the course of these phenomena be not exceedingly rapid, the specific action of mercury will be exhibited in the mouth, to an excessive and distressing degree; and

even where the symptoms now enumerated do not occur with the violence marked, salivation in its worst form may be looked for ; while bowel complaints of almost every variety, indicating inflammatory and highly irritative action, are met with ; as also disorders and derangements of the stomach in particular, and of the digestive organs at large—such as colics, dyspepsia, chronic dysentery, and *palsy*. With these we sometimes observe strangury.

There is reason to believe that an antidote has been discovered for this poison. If the practitioner has been called in time, he should administer vegetable *gluten*, which ought to be kept ready prepared, and would no doubt be so, were cases of poisoning by corrosive sublimate more frequent. Where this cannot be obtained, a useful substitute will be found in *albumen*, the most convenient mode of obtaining which is by beating up the white of eggs. These substances decompose the poison, and reduce it to an insoluble muriate, chloride, or calomel. It may then be proper to evacuate the stomach ; but perhaps the quantity of corrosive sublimate administered may not be sufficient to form calomel to such an amount as would prove injurious, were it even allowed to remain, and pass the intestinal canal, as in ordinary cases.

Both this and the former poison have acted injuriously when introduced into the body by other ways.

They have been applied to sores on the surface and absorbed thence, and nefariously introduced into the female vagina, and into the rectum in the shape of clyster.

On examining the bodies of those who have died by this poison, the appearances have not been uniform; identity in this respect will, however, depend upon a constant combination of circumstances, which is hardly ever to be looked for. Traces of inflammation are to be met with in the stomach and intestines; the former manifested by dots, or spots, of a stellated distribution, and varying in colour from red to black. We may also meet with perforations; while ulcerations will sometimes be found in the larger intestines, although the intermediate portion of the canal may be free.

As with regard to arsenic, so formerly great stress was laid upon the detection of mercurial poison by means of chemical tests or re-agents. Some of the substances already alluded to were employed for the purpose, and the inference as to the identity of the poison was drawn from the phenomena accompanying precipitation. From the mere circumstance of the readiness with which mercury amalgamates with gold, we have it in our power to demonstrate its presence by the simplest of all experiments. Let a drop of the suspected fluid be placed either on the case of a gold watch, or on a gold coin, or any other article of clean gold, and let the surface

of the metal be touched, through the medium of this fluid, by any article made of zinc or iron, such as the point of a pen-knife, a key, or even a needle, and, if a very small portion of mercury be present,* there will remain an indelible dark spot, larger or smaller, according to the size of the instrument with which the gold has been touched.

This is a true amalgam of gold and mercury, which no other metals will form — effected by galvanic agency, and conclusive as to the presence of the latter.

There are several metallic salts, which at a superficial glance, and to those unacquainted with their respective and distinctive characteristics, might be confounded with the foregoing, and even with harmless substances, for they are all kept in the form of white powders, or pulverulent masses. Such are some preparations of antimony, the sulphate of zinc, oxide of bismuth, some salts of lead and tin, &c. &c.; but as they hardly ever (with the exception of antimony and lead) attract attention, but as cases of rare accident, there can be no occasion to advert to them particularly here.

Tartar Emetic is a compound of antimony, tartaric acid, and potass. Probably it might be re-

* We have ascertained that this test will be effective where the proportion of the mercury does not exceed *one-eighth* of the whole.

sorted to for nefarious purposes more frequently than has been the case, were it not from its peculiar action on the stomach, which would seem to convey an idea that it would be too speedily rejected to act fatally as a poison ; nevertheless, from an uncertainty in its action, and from mismanagement, perhaps, in its exhibition, sinister consequences sometimes follow its employment. The symptoms of an over-dose may be resolved into the result of violent action on the stomach, extending to the intestines ; so that we find vomiting and purging, accompanied with hiccup, loss of deglutition, fainting, and great debility.

The agitation into which the stomach is thrown frequently remains after the cause is removed ; and there is no antidote or particular remedy for cases of this description.

Inflammatory appearances have been found in the body after death ; and the brain would appear to partake of the disorder, congestions and effusions having been found in that organ, and also in the lungs, which sometimes appear of an unnatural colour, and distended with blood.

We can place little reliance upon re-agents : if the suspected substance, or the precipitates produced by them, be dried, mixed with black flux, and exposed to heat in a *crucible*, a button or knob of metallic antimony will be found in the bottom of the mass.

Copper has never been, and can hardly ever be contemplated as an article in the hands of assassins. There are two salts sufficiently well known as deleterious agents ; but they have, we believe, been in every case of poisoning that has hitherto occurred, the instruments of mere accident.

The colour of carbonate, or acetate of copper (both familiarly known under the name of *verdigris*), is of itself sufficient to throw an obstacle in the way of their employment for nefarious purposes. Carelessness in the culinary department may give rise to grave accidents ; but, upon the whole, precautions are so well taken to guard against these, that we need not occupy any space in treating of them. Detection will be conducted under the regulation of the principles noticed with regard to antimony, and the metal will be regained by a similar process.

Lead. — Although this mineral occurs in a variety of shapes as a poison, it rarely attracts the notice of a criminal court. As an article requiring the interference of authority to prevent its noxious influence upon the public health, there is enough to do with it ; and consequently in a work on *Medical Police* it ought to occupy a conspicuous place. It often renders wines, and other liquors, such as cider and rum, deleterious ; but the adulteration of the first of these articles is hardly an English practice, and therefore not an English crime ; and in the two

latter instances the inconvenience has been more a matter of accident or of mismanagement, than of design. In small and frequently repeated quantities, in whatever way it is introduced into the system, it brings on a painful and tedious disorder, termed the painter's colic, which may terminate fatally, and is often extremely obstinate in the treatment.

Lead has been pointed out as having a peculiar action on the bowels, whence it has obtained the title of an *astringent* poison; whereas those we have been hitherto considering belong to a class called *corrosive*, or *escharotic*. The appearances in the bodies of such as die after a course of leaden, or saturnine poison, differ from such as have been recorded under the article *Arsenic*; but the mucous membrane of the intestines is also susceptible of inflammation by the salts of this metal, if they are applied so as to bring on their vigorous action. There can be no difficulty in its detection.

Silver.—This metal combined with nitric acid forms the well-known substance called lunar caustic, whose action on the external parts of the body requires no description. By accident it has been swallowed, and has thus given rise to all the painful consequences that might be anticipated.

CONCENTRATED ACIDS.

As poisons, four of these require notice, though one of them is a vegetable product, and owes its place to a peculiarity which will be mentioned hereafter. It is perhaps not a *concentrated* acid in strict chemical language.

Sulphuric Acid.—This substance (commonly, from a characteristic peculiarity of which it is possessed, termed *oil of vitriol*), when uncontaminated by animal or vegetable substances, is perfectly transparent and colourless, free from smell, and emitting no vapours if exposed to the air. It quickly reduces vegetable matters, such as corks, straws, dust, &c. to a carbonaceous state, and assumes a dark tinge from them. In a similar manner, and with even greater rapidity, it acts upon animal substances, destroying their texture, and converting them into a dark pulpy mass. When mixed with water, considerable heat is evolved. It is intolerably acrid and corrosive to the taste, even when highly diluted; and as its powers of affinity for most bodies that combine with acids are far superior to those of acids in general, we find that it sets carbonic acid free, with a notable effervescence, when applied to carbonates. Keeping these facts in mind, there can be no difficulty in the matter of its detection.

When taken into the stomach it will destroy the

texture of all the parts over which it passes or comes in contact with; therefore the seat of injury will extend from the mouth (beginning, probably, with the lips, teeth, gums, and palate,) to the stomach. We do not conceive that many cases can occur in which it finds its way beyond this organ, as its intense action must be of such a nature as to deprive those parts it first attacks of the power of continuing their functions, and will destroy life through the injury done to the tissues first assailed.

With regard to the circumstance of pain, it has been remarked, that it will be in an inverse ratio to the quantum of the acid swallowed; the reason may be, that as there can be no pain when the organs of sensation are destroyed, so, if the nervous filaments are corroded by this powerful solvent, there will remain no medium of perception.

Vomiting of black and of bloody matter takes place, from the solution of the animal tissues, and the erosion of the blood-vessels. This often affords at once a proof of the genus, if not of the species or variety of the poison; for, in the event of the rejected contents of the stomach falling on any calcareous substance (such as a hearth-stone), there will be an effervescence. The breath is also rendered intolerably foetid, from the sloughs or mortification of the soft parts over which the acid passes.

Almost all the cases that have attracted judiciary notice have been accidental, or in consequence of this poison being administered to very young children.

The selection of proper remedies, and the means of detection, when required, cannot well be mistaken.

Nitric Acid, commonly called *Aqua fortis*, is in no way remarkable as a poison in our experience. According to a continental writer, it is of all others the most frequently resorted to for the purpose of suicide. In its deleterious powers it differs little in point of fact from the former; but in its sensible properties it exhibits the following characteristics:—Exposed to the air it gives off suffocating fumes; and when brought in contact with the skin, tinges it of a yellow colour. It is always in the liquid state. In its affinities it ranks so close to sulphuric acid that there can be little difficulty in identifying it.

Muriatic Acid (spirit of salt)—hydrochloric acid, in correct chemical language—emits white fumes, which are so familiarly known that they cannot well be confounded with any other substance. The remarks on the two preceding acids as poisons are nearly applicable here.

Oxalic Acid is a vegetable product, obtained from the plant *sorrel*, and also from sugar, whence it has obtained the name *acid of sugar*. In its action as a poison it resembles the other concentrated acids, but with this difference, that while a very minute quantity of them will suffice to produce the most mischievous consequences, this must be taken to a considerable extent,—in quantities where there is mention of at least half an ounce. Its deleterious powers seem to have been promulgated through its accidental substitution for *Epsom Salt*, to which it bears, in appearance, a very close resemblance ; both being ordinarily found in the shape of small prismatic crystals, and not differing in a very apparent manner in point of weight. Its being a cheap and easily obtained article has led to its frequent employment for the purpose of self-destruction : we do not know, however, of any case in which it has been selected for the purpose of murder.

Oxalic acid is exceedingly soluble,—about equally so with the salt for which it is most apt to be mistaken,—and has so strong an attraction for lime, that this will separate it from most of its combinations ; and as all ordinary water, even river water, contains some portion of the carbonates and sulphates in solution, the addition of this acid produces a precipitation of an insoluble oxalate, and generally, therefore, renders the water turbid ; which it will do in proportion to the quantity of calcareous matter

that the water contains. In many cases, this of itself will point out the nature of the article, and prevent mistakes; for Epsom salt does not alter the appearance of water; but the marked difference in taste is always to be depended on, the oxalic acid being intensely *sour*, and the purging salt merely bitter. Besides these there are other easy methods of discrimination, which seem to have become generally known; for it is a long time since a case of *accidental* poisoning by oxalic acid occurred.

Lime is at once the antidote, and the most applicable test of this poison.

ALKALIES AND EARTHS.

Three bodies of the first-named class have long been pre-eminent, viz. *Potash*, *Soda*, and *Ammonia*; the two former being fixed, and the last volatile, or disposed to diffuse itself in the gaseous form: the first being called the vegetable, the second the mineral alkali. *Ammonia* is principally an animal product. All of them, in the pure state, are corrosive poisons; pure potash being, in fact, a caustic, called *Lapis infernalis*. It exists also in the state of sub-carbonate, termed salt of tartar, which, in over-doses, possesses the power of acting as a poison.

With regard to the action of these substances when introduced into the animal system, we have little to say. The practitioner can never be at a

loss to apply proper treatment in cases of suffering; but there is not much to be said upon their detection: as, however, they do not come in the way of the jurist, there is no occasion to enlarge.

Ammonia, besides its common chemical properties as an alkali, possesses a peculiar smell, by which it is easily recognised. All the world knows the smell of hartshorn.

Two *earths* of alkaline properties require to be noticed here, viz. *Lime* and *Barytes*; but we can say no more, than that if taken into the system they will produce poisonous effects. Barytes has a very powerful energy in destroying life, as many *accidental* occurrences have shewn. Quick-lime, or pure lime, is highly caustic, and readily corrodes the animal fibre: from this known property, it is used to accelerate the decomposition of dead bodies.

There is a class of substances termed *Neutral Salts*, compounded of an acid, and an alkali or an earth, in which form the distinctive characteristics of either body is lost, or altered. Thus, although pure sulphuric acid or pure soda is each (as we have shewn) a deleterious agent,—sulphate of soda, or a certain proportionate combination of these two, is a well-known purgative termed *Glauber's Salt*. So with nitric acid and potash; except that if this com-

pound, nitrate of potash, or nitre (saltpetre), be given to a certain extent, it will produce deleterious, and possibly fatal effects.

Nitre finds a place in all catalogues of poisons, and it ranks in systems of toxicology among those of an *acrid* nature; whereas all those hitherto alluded to belong to a class called *corrosive*, or *escharotic*. It operates by over-exciting the action of the stomach and intestines, rather than by destroying their texture; but if this excitement be carried a sufficient length, traces of inflammation may be looked for. The leading symptoms are excessive vomiting and purging.

Lastly, among poisons of this sort, perhaps, may be noticed *pounded glass*. It has no specific or chemical action, and is not a poison in the scientific acceptation of the term. It will act on the coats of the intestines by the angular or mechanical form of its particles, irritating and tearing their structure, and producing very distressing consequences. It is insoluble in all ordinary or accessible menstrua; and a careful *eye* will have little difficulty in detecting the presence of its particles.

GASES.

These bodies are now familiarly known to be the constituents of all parts of nature; and their common properties require no description: but as they are most readily and conveniently obtained from mineral substances, they probably might be said, without much risk of inaccuracy, to claim notice as poisons, in this place. Sometimes they emanate from other sources, as from decaying animal and vegetable matters; but when this happens they are connected with the loss of life by accidents that require no judiciary process.

The gases which are most likely to cross the path of the medical jurist, are *Chlorine*, *Carbonic Acid*, *Sulphuretted Hydrogen*, and *Carbonic Oxide*.

1. *Chlorine*.—It has been just said, that the gaseous emanations of muriatic acid are extremely pungent: they are identically the substance now under consideration. If inspired, chlorine will greatly irritate the lungs and disorder the general system: but under ordinary circumstances it can hardly proceed this length; and therefore it may be passed over, as confined to the recesses of the chemical laboratory, in any thing like a formidable shape.

2. *Carbonic Acid*.—There is a variety of situations of a familiar description in which this gas is given

out in considerable quantity; and therefore (if deleterious) it is exceedingly dangerous. Wherever liquors are undergoing the process of fermentation, or vegetables are in abundance during the night; wherever animals are crowded together without an adequate supply of atmospheric air; where charcoal fires are kindled and ventilation is impeded; where lime is reduced from the state of a carbonate to that of pure calx—in these, and in other situations—as in brewers' vats—in green-houses—in cellars—in crowded and ill-ventilated apartments—in bathing rooms—and in lime-kilns, there is danger:—

Because carbonic acid gas (*olim* mephitic air) is non-respirable, and if it be substituted for atmospheric air, it will soon take away life.

The most familiar illustration we have upon this subject, is what takes place in mines, under an accumulation of choke-damp, as it is there called: but it is said that in France the fumes of burning charcoal are frequently employed *pour s'asphyxier*, as being a very easy mode of death.

3. *Sulphuretted Hydrogen.*—This noxious emanation is commonly met with in cess-pools and similar situations. Miners are often killed by the explosion of a near relative of this gas, viz. *carburated hydrogen*, which, in their language, is termed fire-damp; and with whose *useful* properties we are

now so familiar, from the general use into which it has found its way for the purpose of illumination.

4. *Carbonic Oxide.*

It is the duty of every medical man to recognise the phenomena of death under exposure to noxious gases, which hardly possess discriminative character sufficiently marked to be available for useful purposes in a work of this nature.

To the foregoing list of poisons we shall merely add the names of *phosphorus* and *iodine*. If cases ever occur to warrant inquiry, the intelligent practitioner will know how to discharge his duty.

VEGETABLE POISONS.

The number of vegetable poisons is much greater than that of minerals, and many have been much longer known as deleterious bodies; some few discoveries have been made of late years, by which not only has the list been enlarged, but the world has been introduced to a knowledge of such intense and rapid agents of a deadly nature, that dissatisfaction has been excited with toxicological discoveries, in which we should hardly be disinclined to participate, were it not that the facility of detecting crimes, and of relieving casualties of this nature, has surpassed whatever additions may have been made to the danger.

Vegetable poisons (or poisonous *vegetables* rather) have not been often resorted to for the purpose of crime, on account of their bulk and sensible properties, which render it almost impossible to administer them without suspicion on the part of the intended victim; nor has their detection, under ordinary forms, been so difficult, as they do not rapidly undergo those changes, and enter into those combinations, in the *primæ viæ*, which are characteristic of minerals. Modern researches have, however, traced the active properties of almost every well-known vegetable to a particular principle of an alcaloid nature, which, when educted from the other bodies or principles with which it is ordinarily in combination, furnishes a more powerful agent than the vegetable under its common form—a more uniform and manageable remedy—a more virulent poison—but a more readily testable and detectable one.

Such of those *principles* as are likely to claim our observation require to be distinguished —after which we may refer to the particular vegetables in which they have been discovered to reside.

1. *Strychnine, or Strychnia*.—For the mode of separating this principle from the *nux vomica* and *bean of St. Ignatius*, we must refer to other sources;* and also for a description of its properties and cha-

* Vide Magendie's Formulary.

racters. We shall merely remark, that it may by a certain process be obtained in a crystalline form.* It has no smell, but its taste is insupportably bitter, strongly resembling that of certain metallic salts. It is, however, nearly insoluble in water; but even when diffused through six thousand times its weight of this fluid, it preserves its characteristic taste. It is the poisonous principle of the *nux vomica*, and differs in no respect from the action of this vegetable, except in possessing greater energy. It is difficult, however, to separate it from another principle with which it is intimately combined in the *nux vomica*, viz.:

2. *Brucine* — to which also the poisonous properties of the vegetable now mentioned, and those of the *false Angustura bark*, are owing. Brucine is also found in the *bean of St. Ignatius*, and in the *upas tieute* of Java, still in combination, however, with *strychnine*, — although it appears that in the last-mentioned plant the *strychnine* predominates, almost to a state of purity, possessing powers of greater energy than the *brucine*. This latter principle is rather more soluble in water than the former, and has a very intense bitter taste.

The test of brucine is the acquisition of a crimson-red colour, by the addition of concentrated nitric

* Vide Magendie's Formulary.

acid, which, upon being heated, passes to a yellow ; if, when in this state, a solution of proto-hydrochlorate of tin be added, a fine violet precipitate is produced, which nothing but *brucine* will yield.*

3. In submitting opium to analysis, it has been discovered that its active powers reside in two principles which have been denominated *morphine* and *narcotine* ; the former of which has obtained, under combination with the acetic and nitric acids, a degree of confidence in medical practice, which it will probably maintain. It has been the subject of an interesting judiciary investigation in a neighbouring country ; but it is doubtful whether it had actually been employed for the purpose of poisoning, even in that instance. If so, it would appear that it may bid defiance to chemical attempts at detection. Till of late we only knew of opium, *quasi* that substance, or its simple preparations, as means of poisoning ; and even then, in the great majority of cases, as the weapons of suicide.

4. *Hydrocyanic* or *Prussic Acid* is the most deadly of all known poisons, in its concentrated state. It is now recognised as the peculiar aromatic principle of the peach-blossom, the black currant, and the bay-leaf, the bitter almond, the

* Vide Formulary, &c.

distilled water of the cherry-laurel, &c. In the last-mentioned vehicle its poisonous powers have been known for many years, though its identity had not been made out. In its pure state, the odour is injurious; and even when highly diluted, it is a most virulent poison. A small quantity of laurel-water has produced instantaneous death; and a single drop of the pure acid has acted in the same manner when introduced into the throat of a powerful dog. As it has now been recommended, in the treatment of certain diseases, it may find its way into improper hands; though the danger is somewhat chimerical, as it can only be obtained under the authority of a medical prescription.

Still, in combination with other products, we have reason to believe that it has been made use of for felonious purposes; and it has often proved fatal by mistake or mismanagement.

Digitaline from *digitalis purpurea* — *emetine* from *ipecacuanha* — and some others have been obtained; but as these alcaloid principles can rarely fall under observation in ordinary circumstances; and as, for the detection of vegetable poisons, certain accessory properties and characteristics must be taken into account, it will be more satisfactory to turn to the plants and preparations in question themselves.

No doubt ought to be entertained that a practitioner of medicine is able to recognise these in

almost every instance by means of their botanical characters, when presented to notice in an unprepared form ; or by their sensible properties, when in the forms that it is customary to see them reduced to in the hands of the druggist. If, however, courts exact the application of minute chemical research for this purpose, after the manner pointed out for the detection of arsenic, a new era will be introduced into pharmacy, and its application to jurisprudence will become a very important study.

Vegetable poisons have been divided into classes, according to the nature of their action on the living body : they have been termed *acrid*, *narcotic*, and *narcotico-acrid* ; and although the distinction is neither very perfect nor satisfactory, it may be convenient to notice such as demand attention in this order. The method is less objectionable, perhaps, when restricted to the classification of *vegetable* poisons than when extended throughout the whole range of toxicology.

Acrid Poisons appear to differ from the corrosive rather in degree than in kind of action. They irritate the intestinal canal, and produce some of the severe symptoms already described ; but they do not, by chemical combination with the texture of the bowels, directly destroy their structure. From their effect in inflaming these organs, and the traces of redness which they leave behind, they have been termed

rubefacient poisons. *Nitre*, however, a product of the mineral kingdom, and other neutral salts, when given in undue quantity, seem to act in a similar manner.

The following are the individuals of the vegetable kingdom that occur most frequently as poisons:—

Cucumis Colocynthis (the bitter apple). — The appearance of this substance is sufficiently familiar to render description unnecessary. In this country we see it in a dried state: the pulp of the apple forms a very excellent purgative, but in an over-dose it acts violently both on the bowels and the general system. Females in a state of illegitimate pregnancy have recourse to it, under a mistaken notion that it has peculiar power of acting on the womb, and exciting it to throw off its burden. In cases of poisoning by this article, and most of those we have yet to notice, the circumstances of the case will generally throw considerable light upon it, and will be required to be taken into account in the article of detection.

Camboge, or *Gamboge*, is the exudation, or inspissated juice, of an oriental plant, used not only for medicinal purposes, but well known as furnishing an excellent yellow to water-colour painters. In its action on the animal economy, when imprudently used, it bears a close analogy to the former.

Veratrum album (white hellebore); *Helleborus niger* (black hellebore); *Elaterium* (wild or squirting cucumber); *Juniperus sabina* (the savine); *Aconitum napellus* (monkshood); *Rhus toxicodendron* (the poison oak); *Ranunculus acris* (the butter-cup); *Colchicum autumnale* (meadow saffron); various *Euphorbia*, and some other plants, partake so closely of the properties of *colocynth* and *gamboge*, that it would be difficult to avoid a servile repetition, when treating of them, unless recourse were to be had to their botanical characters; for a knowledge of which, parties unacquainted with, and desirous of possessing it, must have recourse to works whose province it is to describe them. As poisons, there are scarcely any instances to be found of their attracting notice, except among the list of accidents. Criminal allegations have hardly ever been connected with their history; and for the knowledge of their activity we are chiefly indebted to experimental research.

Narcotic Poisons act by producing stupor. They are, without exception, of the vegetable kingdom, and the following are the principal individuals that require notice, as examples.

Opium.—This is a product (viz. the exudation from the head) of the white or sleepy poppy. We generally import it from the Levant; but it might be cultivated with advantage at home. It is found

only in the shops, where it is kept in the form of a dark-brown or chocolate-coloured concrete mass, never to be mistaken by those who are acquainted with its odour. It is soluble in many fluids, but in alcohol it is the article which forms the substance termed *laudanum*. In its medical administration the quantity must vary according to the purpose intended; but beyond two grains of solid opium, and fifty or sixty drops of the tincture (*laudanum*), it is, in most instances, unsafe to go. By habitual resort to this intoxicating drug, persons come to bear, and unhappily to require, large quantities—quantities which, if specified, after this statement, would hardly appear credible. Given to a moderate extent, it raises the spirits, diffuses tranquillity through the system, gives a pleasing impulse to the imagination; and is, for purposes of this nature, resorted to by weak-minded individuals under the pressure of calamity. As it likewise relieves many modifications of bodily pain, the habit of opium-eating is not unfrequently acquired by those who labour under physical complaints of a chronic nature. Wherever these specious services are rendered by opium, the permanent consequences are of the most distressing description, and are now so well known as to supersede the necessity for recording them.

When taken to an extent sufficient to excite its deleterious action, the following symptoms generally make their appearance. The person soon falls into

a state resembling that of sleep, which passes to lethargy, and, finally, to apoplexy. Breathing becomes stertuous ; the pupils lose their contractility ; the face is often flushed, and the lips thickened ; the pulse becoming feeble and obscure ; while the system at large exhibits an aspect of immobility and relaxation, becomes insensible to stimuli, and is frequently attacked with convulsions, the precursors of death.

The strong taste, odour, and colour of opium, are much against its successful administration as a poison to others ; but its powers are so generally known, and it may be said to be so easy of access, that the suicide is induced to resort to it in numerous instances. . It is not unlikely to be mistaken for other substances to which it bears a resemblance. In the solid form it has been mistaken for aloes ; and its tinctures are very like other preparations of less intense power. It can hardly ever present difficulty in the way of recognition to those who have any acquaintance with its odoriferous peculiarities.

We cannot deduce its exhibition from the appearances discovered on opening the bodies of those who are destroyed by it. Apoplexy, and that modification of it indicated by general turgescence of the vessels of the brain, is in all cases to be looked for ; but these are also the result of other causes.

There are a few other vegetables which resemble the foregoing in their powers and properties — one

of which has been long substituted for opium in cases where this drug is likely to produce certain inconvenient results; prominent among which is the *Hyoscyamus niger*, or henbane. The tincture of this article bears a close superficial resemblance to that of opium, but may be administered with impunity to a much greater extent.

Of all the *narcotic* poisons, the most formidable is the *Hydrocyanic* or *Prussic Acid*. It will long be an object of interest to the jurist on account of the very important trial which arose out of an allegation of its employment in the year 1781.* Much dissatisfaction has since prevailed as to the import of the testimony on which the prisoner was convicted; and it is by no means clear to the minds either of lawyers or of medical men, that the professional evidence was conclusive. The *circumstances*, however, even as detailed by the medical witnesses, were of the strongest nature; and *Prussic acid* must have been recognised in some of the articles swallowed by the deceased. Its odour and other characteristics could hardly be mistaken by men who had made it the subject of experiment.

In that case the poison was known only as the distilled water of the *cherry-laurel* tree, or shrub.

* That of Captain Donellan, who was executed at Warwick, for poisoning Sir T. Boughton.

Laurel-water had begun to be recognised in a limited circle as a strong poison ; further research has detected the presence of the poisonous principle now under consideration in a variety of other bodies ; but more distinctly in the peach-blossom and kernel, the black currant and bay-leaf, the bitter almond, and the kernel of several stone-fruits.

From such sources *Prussic acid* has been obtained in a concentrated state, and has been thus rendered available for medical purposes. In this form, it may be safely concluded that it falls in the way of men of science only, and that it can hardly be obtained except under the sanction of a medical prescription.

Animals destroyed by this poison die convulsed in the strongest manner : in most of the cases on record (particularly of an accidental nature) the death has been rapid—often, indeed, instantaneous. No reliance, however, can be placed on appearances discovered in the body, for the purpose of detection. The practitioner may almost confide in the strength and peculiarity of the smell of the vehicle ; but there has been given a chemical process for this purpose which it will always be his duty to institute.

The fluids found in the internal parts or cavities of the body, in the brain, heart, stomach, and intestines, are to be collected, and agitated for some time with distilled water, and after filtration are to

be treated in the following manner : — To a portion of this fluid a solution of potass, in alcohol, is to be added in small quantity ; after which an addition is to be made of a small portion of sulphate of iron, in solution. There will thus be formed a precipitate, of a brown colour, known in commerce as a pigment, under the name of *terra Siena*. If sulphuric acid be now added, the colour of this precipitate will be changed, first to a bluish-green, and ultimately to the true Prussian blue. A corroborative variation of this experiment may be made by first adding carbonate of potass and a little alum, with the sulphate of iron. If, after this, sulphuric acid be added, the above-described result will ensue, along with the disengagement of carbonic acid gas.

Prussian blue, or *Prussiate of iron*, thus formed, may be decomposed by heating the precipitate with an equal quantity of tartaric acid, in a glass retort, at a temperature of 150° Fahrenheit. In this way the vapours of the acid will rise, and may be received in water.

Narcotico-acrid Poisons comprehend a very numerous class of deleterious bodies, whose energy is of the most active description ; but the title has been generally censured, while no better one has been substituted. The poison of the Upas tree, of the Ticunas, Woorara or Wourali, and perhaps one or two others, whose properties are more matter of

travellers' report than of our own observation, find a place under this head.

Of those which claim the attention of the European or British practitioner, it will be sufficient to mention the following (without entering into any claims they may have to individual notice), as exhibiting the combined action of the acrid and the narcotic poisons, while this combination seems to assume a character somewhat distinct from either.

Here, then, are classed the *Digitalis purpurea* (foxglove), *Atropa belladonna* (deadly night-shade), several varieties of *Hemlock*, *Tobacco*, *Nux vomica*, and *Coculus Indicus*. Their properties have, in the majority of instances, been found to reside in the alcaloid principles already alluded to; and whenever the medical witness finds himself unable to speak positively to the botanical or sensible qualities of the article in question, he will lay himself, perhaps, under a necessity of inferring the presence of some one of these alcaloid bodies by a troublesome chemical process; and if he can give no satisfaction either as a botanist or a chemist, he must lay his account with being looked upon with suspicion as a well-educated or qualified practitioner.

The mushroom tribe, alcohol, and some other poisons, are introduced under this class in most systematic works upon the subject; but they furnish little scope for juridical inquiry—unless of an obscure nature.

ANIMAL POISONS.

The consideration of these belongs almost exclusively to the province of *Medical Police*; for the bites of rabid, or the bites and stings of venomous animals, can never be inflicted by felonious design. It is, therefore, of more importance to devise means for their prevention and cure, than to waste words upon the well-understood subject of their detection.

There is one article, however, respecting which it may be requisite to observe, that its classification in most systems requires that it should be noticed among the corrosive or escharotic poisons—we mean *Cantharides*, or the *Spanish fly*. From its well-known action in blistering the surface, we can readily infer the consequences of administering it internally. There has been a prevalent mistake as to certain *virtues*, or *vicious* properties, being supposed to reside in this article, whence imprudent liberties have been taken with it by foolish people and exhausted debauchees.

SLOW POISONING.

In all the foregoing cases, the effect of the poison is understood speedily to follow its introduction into the system; but fatal consequences may not be the less traceable to similar causes, that they do not supervene until a distant period. There was for-

merly a very general idea that poisons might be so managed as to produce the desired event at a definite period, suspicion being in the mean time lulled, and murder being in this way actually practicable without risk of detection. We may safely affirm, that there is no such security now; and the whole affair of procrastination seems to resolve itself into,—1st, cases of *consecutive* poisoning, in which, though one dose may be sufficient, and the immediate effects are violent, there is an intermediate recovery, and the person dies of the consequences at a distant period; and, 2dly, cases of *accumulative* poisoning, where repeated small doses are administered, until their accumulated effect becomes of the most serious consequence. In the former of these, detection by mere medical agency may not be possible; in the latter, a very extensive knowledge both of toxicology and pathological physiology will be requisite.

SUFFOCATION.

The next class of questions arising out of the destruction of life by violent means, comprehends the varieties of *suffocation*; which may be effected by *inhaling irrespirable air*, by *smothering*, by *drowning*, *hanging*, or *strangling*.

Of exposure to noxious gas, all has already been said that can be useful in eliciting evidence, without

going into details; and, upon suffocation generally, it may be remarked, that its primary phenomena are owing to prevented respiration, whereby the circulation of the blood is arrested, and accumulations may take place in various parts—more particularly, however, in the heart, lungs, and brain; consequently, the apoplectic state is but one of a train of signs incidental to this modification of death.

Simple interruption of respiration is caused by applying an obstacle to the passages of the mouth and nostrils, by which no air can have access, while that taken into the lungs cannot be again expelled. The consequence must be, that the blood within the system cannot undergo that essential process of oxygenation which requires to be incessantly renewed, in order to render it fit for the support of animal life. The blood of the venous system (a blood deprived of this principle), if reconveyed to the brain, is understood to exert a directly deleterious and fatal influence.

A very few minutes will be sufficient to cause death by *smothering*; and this species of violence may be effected by *overlaying* (as it has been termed in cases where children are concerned); by stopping the mouth and nostrils with the hand, or thrusting a soft substance into them. The evidences of a fact of this nature will be found in the state of the blood, and in the history of the case.

It may, however, be a problem not so easy of

solution, when a body has been found in the water, whether it be that of a person drowned, or not; and in some cases it is possible that the evidence of medical men may throw light on the fact of death by drowning, being accidental, voluntary, or violent.

The questions to be put to a medical witness, in an apparent case of drowning, ought to elicit whether the appearances discovered in or about the body are indicative of that or some other species of violent death. Cases have not unfrequently occurred in which life had been first extinguished, and the dead body afterwards thrown into the water, in order to baffle detection, or mislead inquiry. It is also of importance where there are marks, that the witness should be able to say whether these have been inflicted before or after death; for such are means of very accurate discrimination.

Where a person has died in this way, whether voluntarily or by violence, the principal proofs are deducible from certain appearances in the body,—such as a dilatation of the pupils, a frothy exudation about the mouth and nostrils, protrusion of the tongue, and frequently (though not uniformly) undue redness of the face, which may be present where the rest of the surface is preternaturally pale.

On opening the body we may expect to find an accumulation of blood in the right side of the heart, the cavities of the left side evacuated; the lungs

turgid ; and frequently, also, the vessels of the brain gorged. The froth extends into the wind-pipe and bronchia ; but this phenomenon is not uniformly observed.

The blood in the body, generally, is not coagulated ; and sometimes water is found in the stomach. This last is an incidental circumstance, for which it is difficult to account. When present, if there be any peculiarity about the water which may identify it with that in which the body has been found, it is a corroborative circumstance.

If there are wounds, signs of strangulation, poison in the stomach, or other unequivocal marks of violent usage about the body, (more especially in the absence of the foregoing,) the truth of the history as to death by drowning will hardly be maintainable, without circumstantial, moral, or direct evidence.

Some importance has been attached to the state of the hands and fingers. If these contain grass, sand, dirt, or other matters, that may have been seized in the dying struggle, it may be warrantable to infer that the party was alive, and able to exert some muscular force when first submersed.

Bodies which remain in the water float after a few days (the time being indefinite), owing to their losing a portion of their specific gravity by the evolution of gaseous matter during the primary process of decomposition. At first they sink ; and if animal bodies are kept under water for six weeks, par-

ticularly where there is a running stream, a portion at least will become converted into a substance of a fat-like nature, resembling spermaceti, and termed *adipocire*.

Death by *hanging* (with an exception or two that need not be named) is always a spontaneous act, and never requires medical evidence to prove its perpetration by other parties; whereas *strangulation* is hardly practicable by a person on himself, and a manner of committing murder not at all uncommon.

Strangling is nothing more than pressure upon the windpipe from without: fatal pressure may take place by the presence of a foreign body in the gullet, but then it is called *choking* — a term hardly applicable to a case of premeditated violence. Strangling may be effected by a ligature, or by the hand only; but in either way the rationale of the event will be the same. The pressure may be applied to various parts; and it may be partial, or general: partial pressure may be exerted on the jugular veins, or on the windpipe only, — general pressure involves both. When the former only is applied, should death occur, it must be through turgescence of the brain, or sanguineous apoplexy: when pressure is made on the trachea, the organs of respiration are first affected, and the case is one of *suffocation*, in the sense already pointed out. Commonly, however, the violence is complex. Pressure on the

trachea, either by a ligature or by the hand, gives rise instantly to a violent shock;* but, whatever be the instrument employed, an impression will generally be left round the neck, in a horizontal direction, pointing out the form of the article made use of: thus, when there is question of a rope, its twisted form will indent the soft parts in a similar manner; if it be a handkerchief, a piece of tape, or the hand, corresponding marks will be found; while, on examining the spine, we shall find that no dislocation has taken place, without, at least, more or less of laceration among the muscles, as there can hardly be a simple disjunction between vertebræ, as is sometimes found in hanging. The chief criterion will be either the partial distribution of marks of violence inflicted by the hand and fingers, or the horizontal direction of the ligature: the mark of the cord is also frequently at the bottom of the neck.

But in *hanging*, the internal signs being much the same, there will be this difference — that the mark of the cord will be towards the top of the neck, and not horizontal: if the person has been first strangled, and then hung up, we shall, in all probability, find two marks, the horizontal one more livid than that left by the application of a cord after life has been

* The application of one's own hand to the throat will convey an idea of this: and if even a frantic maniac be seized by the *wesand*, he is instantly rendered powerless.

extinguished, and the circulation arrested. A laceration of the trachea has been alluded to as one of the phenomena in cases of this description, though that of itself can hardly be taken into account as a cause of death; and a dislocation of the cervical vertebræ, which is not a constant accompaniment, though, where it does occur, it may be set down as corroborative. Much stress is not to be laid upon the presence or absence of suffusion in the countenance, for it often depends upon the rapidity with which the ligature or compressing force is removed.

WOUNDS, &c.

Mechanical violence is, after all, the most frequent manner in which accidental death, or homicide, is induced; and this may be resolved into wounds, bruises, contusions, &c.

By a *wound* we are to understand a division of the soft parts of the body; when the hard portions, as the bones, are thus injured, we speak of a *fracture*. Where the soft parts are not cleanly or simply divided, but are rather torn asunder, and the opposed extremities of the injured fibres exhibit a fringed appearance, it is called *laceration*; and *bruises* or *contusions* are those results of forcible injury which display swelling and discoloration, without *wound* or division; but wounds are often inflicted along with these, and from the state of

neighbouring parts we may sometimes with propriety speak of contused wounds; and surgeons also employ the term lacerated wounds.

Again, as to *wounds* — perhaps it may be said that they are uniformly the result of force inflicted on the external surface of the body, though sometimes there will be no mark of injury there, while extensive damage will result within. They may be inflicted with sharp, cutting, or stabbing instruments, — when in the former case, they are styled *incised*, and in the latter, *punctured* wounds: thus, a wound inflicted by the edge of a sword, or that of a knife, will be of the former description; whereas a thrust from a bayonet, or a plunge from a stiletto, will inflict a punctured wound. Wounds of the lacerated kind, and contusions, are generally the result of a blunt body or weapon, applied with force. Wounds of this nature are more serious, *cæteris paribus*, than the others, for they not only may reach or involve organs of the greatest consequence to life, but they are of a nature not so easily healed, as they destroy the energy and texture of the parts, as well as separate their continuity. Besides these latter characteristics, *gun-shot* wounds have peculiarities attached to them, which increase their formidable nature.

If the intent with which an injury of this nature has been inflicted can be proved, justice hardly requires evidence as to its description. It is impossible

to limit the time at which mechanical violence may prove fatal, consequently the old responsibility for the space of 366 days has been properly done away with. The business of the surgeon on such occasions was also very troublesome, and his assistance rendered unavailing, from a necessity which existed of laying down a scale, according to which wounds were to be estimated as mortal, dangerous, or slight, according to their circumstances and situation, which in no two instances can be precisely alike. The *animus* of doing grievous bodily harm is the more equitable rule of judging here, because no one resorting to violence of this nature can premeditate a certain degree of effect, which, perhaps, is in the power of him who administers poison.

The medical practitioner, however, should be able to explain when wounds may, in appearance, prove fatal, while the real cause of death is different. This was the case in the celebrated Oldham business; and in many instances it will be indispensably necessary to ascertain how far wounds may be modified or aggravated by the state of health, and constitutional peculiarities of the party sustaining them, by the treatment applied, and by circumstances of too varied a nature to render description, or even allusion, possible.

The danger of wounds will depend upon the three following circumstances; — their nature — the parts

in which they are inflicted — and the manner in which they are treated.

1. As to their nature. Simple incisions confined to the surface are seldom dangerous, at least in a sound constitution. They generally heal with readiness, if the sides are allowed to remain in contact, and seldom inflict any injury of a permanent nature, or more serious than a scar. It must, however, be kept in mind, that much of this depends upon the direction and extent of the wound, as well as upon the parts which it involves : there are organs placed on the outside of the body, which, though not indispensable to life, are of the greatest importance to the welfare of the individual. A man, for instance, after losing an eye or a limb, may remain in perfect health, and live as long and as vigorously as he otherwise might have done ; but he may be totally disabled for the exercise of his proper business.

The organs most indispensable to life being contained within the cavities, wounds entering them will, of course, prove more serious ; consequently deep punctures or stabs are more important than cuts. They are more difficult in their treatment too, and their profundity generally exceeds in relation their superficial extent. *Cæteris paribus*, lacerations are in all circumstances more troublesome than incisions ; and bruises, or contusions, derive importance from the parts upon which they are inflicted, as also from their number. It should

likewise be observed, that sometimes numerous wounds may be inflicted, one only of which will prove serious or fatal; and it will then be the duty of the medical witness to point out to which this distinction is due, as well as to give satisfactory reasons for his discrimination. Occasionally we meet with extraordinary and inexplicable departures from the ordinary course of these matters: wounds, the most insignificant in appearance, and even at first in point of reality, will produce the most distressing and fatal consequences; while injuries of a very extensive nature will sometimes pass off with little inconvenience, and no permanent injury.

2. The importance of wounds will depend also upon the parts in which they are inflicted. Wounds of *nerves*, for instance, are always to be looked upon with apprehension: wounds of blood-vessels are dangerous on account of hæmorrhage; and of viscera, from the delicacy of their structure, their importance to life, and intimate connexion with the nervous system. Nerves and vessels may be reached in almost every part of the body, and through the connexion that one part of either of these systems maintains with the rest, the most important organs may be *indirectly* involved.

Perhaps the organ of all others essential to the maintenance of the living functions is the brain, consequently injuries inflicted upon it are to be presumed of the most serious nature. So, in ge-

neral, we find them ; but there have been unaccountable exceptions on record ; and the general opinion seems to be, that wounds of the heart are still more fatal than those of the brain. But even here there have been recoveries ; and the inference to be drawn, in the case of either organ, is not to the exculpation of a premeditating aggressor, but for the encouragement of the medical practitioner in the exercise of his skill, and perseverance in remedial applications.

A fatal event can rarely be separated from a wound of the spinal marrow ; and a wound inflicted upon one of the large internal blood-vessels must be set down as *absolutely* mortal. There is some scope for difference of opinion about the necessary mortality of wounds in the lungs ; and the prevailing doctrine now is, that wounds of these organs are often got the better of : in general, however, they are of the most serious nature ; and if they do not prove directly fatal, they may lay the foundation of incurable disease.

Wounds penetrating the cavity of the abdomen are generally fatal, though seldom so promptly as in the cases previously noticed. The viscera contained here are peculiarly liable to inflammation from almost any irritating cause, but especially from such as are applied to their peritoneal surface.* Should the

* That is, the surface, external as to the structure of these viscera, though still within the abdominal cavity, which is

proper contents of any of them be poured out into the general cavity, whether it be blood, bile, chyme, chyle, or urine, they produce the most mischievous, and, it may be said, incurable effects. One characteristic of wounds and corresponding injuries in these regions is acute pain. Nevertheless, we not unfrequently find that wounds of the intestines themselves do not terminate fatally.

In all such cases (of wounds penetrating the cavities), careful and intelligent dissection will disclose the nature of the case; but it is to be lamented, that adroit necrotomists are not common among medical men. It too often happens, that careless or ignorant attempts at this, derange the original injury, and sometimes lead to the infliction of others, whose course and aspect puzzle the bungler himself.

Peculiarities of structure, constitution, or other circumstances, will likewise modify the danger; for a wound or a blow, that in most individuals would be a simple affair, may induce the most serious consequences, from some deviation peculiar to the person sustaining it: thus, a kick in the groin may be a very slight matter in itself; but if the party happens to be ruptured, the violence will be inflicted on a most delicate organ, which, in its usual place, would have been beyond reach of the injury. A very slight

covered by the membrane called peritoneum, which either lines or covers every thing contained in the abdomen.

blow on the head has proved fatal, owing (as was discovered upon dissection) to preternatural thinness of the skull; and even a paroxysm of anger has been known to prove suddenly fatal, by causing the rupture of an aneurism of the great vessels, or of an abscess in important organs.

3. The issue will be greatly influenced by the professional treatment of these injuries. By inattentive or unskilful conduct, the surgeon may literally become an *accessory after the fact*; and cases of this kind not unfrequently form the ground of actions for damages before the civil courts. Matters, very insignificant in the outset, are magnified in this way into affairs of the greatest consequence; while the good effects of skilful perseverance have sometimes been exhibited in an astonishing manner.

The fair course of inquiry in such instances will be, as to the nature or description of the wound or injury; the weapon with which it may have been inflicted; the extent to which it has penetrated or proceeded; the organs involved; their importance to life; the state of the constitution, health, or structure, of the party suffering; and the principles and plan of treatment adopted by the medical attendant.

OF PERSONS FOUND DEAD.

Attention has been hitherto turned rather to cases in which there may be question of accusation as to

some particular cause *alleged*, than of discovery concerning a cause of death *unknown*. But coroners' inquests are frequently held upon the bodies of persons to whose identity there is no clue, and respecting the cause of whose death there may be much doubt and mystery. It will be useful to juries, upon these occasions, to know how far medical assistance ought to be effective in clearing up such matters.

Having suggested the principal topics of inquiry, where there are evident marks, signs, or symptoms of some particular violent death, we ought to observe, that a body may be found in whose aspect there exists no indication of the nature of the case; and it may happen, moreover, that on proceeding to search the interior, even in a very dexterous and scientific manner, no cause whatever, adequate to account for the event, will be discoverable. These, however, will in reality be rare cases, although they may appear to be not unfrequent; which inference we are well assured is in great measure owing to indolence or ignorance on the part of those whose duty it is to investigate such matters. A few intelligent questions put to medical witnesses would have the effect of shewing the importance either of rightly performing or of neglecting this duty.

Wounds and violence, of whatever description, always direct the course of investigation. Attention

is thereby attracted to the part or parts, which, in all likelihood, contain the means of solving the problem. Every thing of this description requires to be traced ; and, in almost every instance, if this be properly done, the real import of the appearances will be discoverable. As with injuries of this nature, so will it be with the majority of cases of death by suffocation ; and in regard to poisons, enough has already been said to shew that accurate examination must lead to incontrovertible inferences.

But whatever may be either the alleged or the apparent cause of death, few indeed are the cases in which the medical man will be excusable if he does not examine all and every part of the body ; that is to say, all the internal cavities and their contents, whatever derangements may be manifest in particular parts.

If this rule be observed, it will generally occur, in the absence of marks of external violence, that the inner parts of the body will display satisfactory evidence of some fatal derangement ; and it is the duty of the medical practitioner to be able readily to recognise the lesions or injuries that are caused by disease, as well as those which result from violence. In the absence of all indications of the latter description, he must pay the more attention to such traces as may be found (among others) of the following causes of death, — which are frequently the subjects of examination before the coroner. Cold —

exhaustion from hunger or fatigue — intemperate drinking — apoplexy — epilepsy — aneurismal sacs in the large vessels — various derangements about the heart and other viscera, whose regularity of structure and function is essential to life — lightning — spontaneous combustion — and a variety of others, the distinctive signs of which have been laid down in all works of authority on medical jurisprudence, and ought to be carefully studied by every medical man.

It may be for magistrates to take into consideration the import of *circumstances* — such as the situation in which the body may be found, as well as the probable connexion of surrounding objects with the event produced. In many, or most instances, a clear comprehension of the real nature of the case will be at once furnished.

Persons, it may be said, never die of cold, hunger, fatigue, inhaling noxious gases, intemperance, or spontaneous combustion, without ample corroboration from the circumstances attendant on the case. But in those instances respecting which it is customary to return a verdict of “died by the visitation of God,” the aid of the medical practitioner is indispensably necessary. In many instances, reports of the most formidable nature are circulated, and appearances may even be suspicious; but when due examination is instituted, it is often found to be a case of death from a natural or morbid cause.

Inflammation, particularly in the internal and essential organs, often runs to a fatal termination, without creating previous alarm or even suspicion as to its existence; and very frequently a circumstance will occur to bring on its last effect, which might give a colour to the case, of a nature widely different from its reality.

SUICIDE.

Suicide is more frequently the subject of investigation in courts of inquiry than in those of justice—before the *coroner* than the *judge*. It may be said that there is hardly any method of taking away life that may not be practised by a resolute person upon himself; but there are some which are more frequent, and even more practicable, than others.

With regard to *poisoning*, it is obvious, that whatever a person may be led to swallow unwittingly, at the nefarious instigation, or by the concealed design of another, he can himself pour down his own throat; and under the persuasion that self-destruction is the deed of one who desires to escape from suffering, we should imagine that those poisons would be preferred which destroy life *citissimè et jucundissimè*. Experience, however, has shewn that (in this country at least, where a false philosophy has had comparatively little success in removing a future state from the contemplation of even the most miserable), there

seems to be no great consolation in the mere *modus moriendi*; so that we find, with very few exceptions, the course resorted to is that which most effectually ensures the event, by means of articles the most accessible. Therefore, instead of hearing of asphyxia by carbonic-acid vapours, or of instantaneous death by hydrocyanic acid, or the inoculation of wourara, ticunas, &c.; our attention is incessantly drawn to the painful action of arsenic and oxalic acid, or to the operation of opium.

Spontaneous death by poison seems to be the mode most generally resorted to by the *lower orders*. Suspension and drowning are also comparatively rare among the higher classes; while this last method of self-destruction seems to have been most prevalent among females. People of fashion generally use either cutting instruments or fire-arms, which last, in particular, are not so much in the power of the vulgar, and require preliminary arrangements, less compatible with their habits, than the mere mixing and swallowing of a poison.

In cases of suicide by *poisoning*, it will commonly be found that more than a sufficient quantity has been taken, while no great pains have been resorted to in order to conceal or disguise the fact. As the party lays his account with suffering, complaint will not be made until outraged nature can no longer be silent; and where there is so little attempt at concealment, detection must be easy.

When death occurs by *suffocation*, our inferences as to suicide will be confined to drowning and hanging; for noxious inhalation, smothering, and choking, are generally of the nature of accidents.

Drowning is seldom the method resorted to by an assassin. If it has been, there will generally be evidences of resistance, which will vary according to the place and circumstances in which the deed has been perpetrated. If death is ascertained to have been inflicted in any other manner previous to placing the body in the water, we can hardly suppose the act to have been that of the individual himself; but it is upon record, that persons have tied themselves with cords before drowning, which would at first sight appear to be evidence of assassination.

We have already pointed out the principal indications of death by *hanging*; and it is merely necessary now to add, that this mode of destruction is almost always voluntary; whereas a person can hardly *strangle himself*.

As to suicide by *wounds*, it may be observed, that these are restricted to cutting instruments and fire-arms;* the great majority of cases in which the former are employed is that of cutting the throat;

* In a few instances suicide has been committed by dashing the head against the wall, and by throwing the body from a height. It is not irrelevant to hint, that there is occasionally a sort of *fashion* in the method resorted to for self-destruction.

and this is not a common method of *assassination*; for, if the throat be cut by others, the victim must either be overpowered or asleep, in order to afford the facility necessary for inflicting such a wound as would be made by a person on his own throat when there is no resistance. Pistols are the fire-arms by far most frequently used, which are commonly loaded with bullets, and discharged either through the head or thorax—rarely in other parts of the body: in fact, the shot is not a random one. Something as to the nature of the case may be learnt from the direction of the wound. It will be strong presumptive evidence of self-murder, if the muzzle of the weapon has been introduced into the mouth.

In cases of *suicide* there is generally so little mystery, that the duty of the medical witness will chiefly consist in satisfying justice that the apparent cause of death is the real one; and this he will qualify himself to do by acquiring a competent knowledge of the elementary medical sciences.

A question having been raised as to the accuracy with which the coroner's verdict of "temporary insanity" is returned in cases of suicide, it may be proper to express an opinion, that such a decision is strictly within the province of the jury, and can seldom be decided upon professional testimony.

INFANTICIDE.

This subject is one of the greatest importance, and has been one almost of *contention* between courts and professional witnesses, particularly where the latter have shewn superior intelligence, and have manifested a desire to perform their duty properly; whence it is fairly deducible, that the *law* must be at variance with the *facts* of such cases. As regards the elucidation of facts, the duty on both sides is simple—much simpler than has been commonly imagined.

The first business of the medical practitioner, when called upon to investigate the case of a supposed murder of this sort, is to ascertain whether the party accused (who in every instance is the mother) has been recently delivered of a child. So many mistakes occur, as to a common rumour or suspicion of pregnancy, that mere statements on this point cannot be relied upon. The body of a new-born infant being found, and the suspected female being identified, the skill of the accoucheur cannot possibly be exercised in vain where the birth has been recent. If the examination be not instituted, however, till after a certain lapse of time, great perplexity may arise, and in general no decisive inference can be drawn. It will also be of importance that the witness should be able to speak to the re-

lationship between the age and appearance of the infant, and the state of the female under suspicion ; and there are means of ascertaining, with great correctness, whether a woman has been pregnant at any former period. This being done, it is for the medical witness to describe a variety of phenomena which it is his duty to investigate ; and a particular order for this investigation has been minutely detailed by writers on the subject. The general fact to be established is the vitality of the infant at the time of birth. If it cannot be shewn that the child came into the world alive, the accusation of violent interference must fall to the ground. It often happens, however, that infants perish in, or immediately after, the birth, from neglect, and such neglect may be the inevitable consequence of a solitary delivery. This last may also take place without any sinister intent on the mother's part ; though it is highly important, if not indispensably necessary, that the concealment of pregnancy, whereby the risk of a solitary accouchement is incurred, should be viewed in a criminal light.

The vitality of the child can only be established upon the observation of certain important changes, produced by an alteration in the manner of circulating the blood, which takes place upon the separation of the infant from the womb of the parent. While enclosed within that organ, the fœtus does not breathe ; and an indispensable qualification for the

purpose of nutriment, which the blood derives from the atmosphere, can only be indirectly imparted through the maternal system; in fact, the vessels of the uterine inhabitant are thus supplied, in common with those of the pregnant female, by an apparatus intended for no other purpose, and not existing in the unimpregnated state. But when the child is born, it is thrown, in this respect, upon its own resources, and a great change takes place as soon as the act of respiration is performed. The origin of this change is in the lungs; and the most remarkable indications of it are to be found in these organs; upon a knowledge of which a proof has been resorted to, that (when taken alone, and superficially considered, may not be conclusive,) deserves more credit and attention than it has of late been usual to accord it.

The sinking or swimming of the lungs of a newborn infant in water is a phenomenon that cannot be overlooked in the process of probation, as regards the vitality of the child. The lungs of an infant which has never breathed, (provided they are healthy, and the child has been matured and brought forth under ordinary circumstances,) will sink in water; but should they float, from causes which are described at large in other works, and with which every physiologist ought to be acquainted, they will, in most instances, float in a different manner from that exhibited by healthy lungs which have been ren-

dered buoyant by the inhalation of air in the natural way; besides which, the colour of these organs will be different in the undistended and in the distended state.

The following are the principal questions which ought to be put to the medical witness in cases of this nature:—

Whether he has ascertained the age, sex, and general condition of the child, and compared these with the state of the mother: if he has discovered any marks of violent attempts upon the life of the infant, either by any of the methods already pointed out, or such as are practicable only on a subject of so tender an age and peculiar conformation: if he has carefully examined the lungs, both as to their specific gravity and absolute weight:* if he has tried the experiment (as to the sinking or swimming of the lungs in water) with the care and skill necessary to ensure a fair result: if these organs were sound, healthy, and free from putrefaction: if the heart was examined, and the state of the vessels passing between this organ and the lungs ascer-

* By s. g. is to be understood their *relative* weight when compared with that of water, already noticed. By *absolute* weight we mean the additional weight of the lungs gained by the whole of the blood circulating through them. Taken by itself, there is no authority for relying upon this proof; but it should always be particularly attended to, and included in the general account.

tained : if the general form and dimensions of the chest, the shape of the diaphragm, and the size of the liver, have been remarked : whether any thing of a corroborative nature was observable in the urinary bladder and intestinal canal. All of which circumstances ought to be taken into account, and most of which should be exacted in a descriptive form. A good deal may also depend upon the state of the navel-string, which may be tied too soon after birth, or (which is more frequently the case) may be suffered to remain unsecured.

Upon some of the foregoing points there has been considerable discussion among medical jurists ; but the conclusions at which the best authorities have arrived are uniform ; and if the witness will take the trouble to make himself acquainted with the reasons from which these conclusions have been drawn, his own may be safely anticipated as likely to be corroborative.

As to the influence of sinister causes on the child, connected with the peculiarities or progress of the labour, nothing is likely to be elicited of a nature to clear up doubts. In general, and, perhaps, without exception, it will be proof of a natural course of these matters, that the woman has been successful in accomplishing the object of concealment. When things go wrong, delivery without aid is seldom practicable ; but a number of circumstances must be familiar to the medical practitioner, which would

cause the death of the child without inferring any *moral* intention of a criminal nature on the part of the female : and as we are fully convinced that unfortunate cases do very frequently present themselves, in which no greater culpability is chargeable against her than the almost inevitable suppression of the fact of illegitimate pregnancy, the evils attendant on a solitary parturition should be pointed out to those for whose guidance these pages are intended.

A child may be lost by remaining even for a short time in a posture unfavourable to respiration — by being suffered to lie in the discharges that accompany the birth — by impediments to breathing existing in the mouth and nostrils — by an unfavourable position of the umbilical chord — by exposure to cold — or by being precipitated into a situation calculated to destroy it ; as when it falls into a privy, or upon a hard floor, as has been the case even with married women, when suddenly overtaken with labour that rapidly runs its course. Surprised by the unexpected approach of this important operation, women often faint ; or where this may not be the case, such unfortunate individuals as become the victims of an imprudent surrender of their chastity, are frequently so little acquainted with the course of such matters as to err from mere ignorance — a circumstance which, if candidly considered, might be fairly construed in a manner favourable to their character.

ABORTION.

The plea as to ignorance, and consequent innocence, with regard to the *animus* of the accused, is by no means so admissible here. The pregnant female is always a party to any attempt which may be made to separate the embryo from the womb, in the early stages of gestation. She may be deceived in some points as to the object intended ; but there are few women placed in this situation who can be altogether ignorant of the ultimate purpose.

The ordinary duration of human pregnancy is nine calendar months. From the termination of the seventh to that of the ninth month, a child may be born in the natural manner ; and after the first-mentioned period the case belongs to the subject of infanticide. From the end of the seventh to that of the fifth month the child may be born, but cannot be reared : all below this period are *strictly* abortions or miscarriages, though, throughout its duration, the separation of the contents of the womb can hardly be called a birth. It will, however, be more generally in the early months, before the size of the pregnant belly attracts the notice of others, that improper interference will take place ; and the duty of the medical witness will consist in ascertaining that an abortion has actually occurred, in discriminating between cases of miscarriage from natural

or accidental causes, or from indirect action on the uterine system, and *positive interference* with the economy of this organ.

The law distinguishes between interference before and after the period of *quickening*. By this term nothing more is to be understood than the attainment of a certain degree of developement or growth on the part of the child. It is as much a living being before, as after this perception of its movements, which generally occurs about the twelfth week from conception.

If the embryo is forthcoming, the practitioner will be able to ascertain its age by inspection. From month to month, and indeed from week to week, during pregnancy, some further acquisition on its part takes place; and although, from its first introduction to the womb, it possesses all the elements of organisation, these do not entirely unfold themselves, and acquire the power of their respective functions, till towards the termination of the full period.*

* It may simplify the subject, if we add, that children born between the fifth and seventh months of pregnancy may come into the world alive, but cannot be reared; these are called *immature*: from the seventh to the ninth month the child may be reared, though *premature*. The fœtus which has enjoyed the fostering and protection of the womb to the full period of nine months, is alone entitled to the denomination of *mature*. In cases of *prematurity*, there are still processes of nature required to perfect the individual.

But as so small a thing as an incipient embryo is easily concealed, and when thrown off, or brought away, may be overlooked or disregarded, the state of the female alone may furnish the evidence of what has been the case. Here, however, the practitioner may be baffled, and his acumen vainly applied, by other causes being assigned for the state in which he may discover the woman to be: even where the proofs of miscarriage are convincing enough to his own mind, he may not be able to assert upon oath that the state of the case is of a criminal complexion. To obtain the ovum, therefore, is in all instances of great importance; and by a comparison of its appearances with those of the party suspected, he may venture to draw an inference without much risk of error.

Criminal interference for the purpose under consideration is of two kinds — the administration of drugs, and the application of mechanical violence. We give up the former entirely, inasmuch as there is no one substance known to the vulgar that has any direct power over the uterus—an organ that *savine*, *colocynth*, and other supposed emmenagogues, can only affect by giving a violent shock to the general system.

They are never used by medical practitioners in any complaint of the uterus. There has been lately introduced into obstetric practice an article that certainly acts directly upon this organ; and we

have no doubt that it has had the untoward effect of causing abortion; but whether it has ever been administered for this purpose or not is yet doubtful. Its name is here suppressed, for obvious reasons.

As to instrumental or mechanical interference, the mode of practising it is no secret among medical men, who (generally speaking) are the last that would lend their aid to do this for an unlawful purpose. Many valuable lives, both of mothers and children, have been saved since the introduction of the practice, where previously one, if not both, must have been sacrificed.

In cases of unlawful interference on the part of skilful persons, the danger is comparatively trifling, concealment very easy, and detection nearly impracticable, unless through admission of the fact by those concerned.

STUPRUM VIOLENTUM.

The evidence of rape is now less dependent on professional investigation than formerly; for children, below the age of puberty, are not so frequently the subjects of this outrage as when venereal complaints were more common, and the dreadful notion was prevalent, that intercourse with an uncontaminated female would remove them. As grown females were more likely to offer objections and resistance, or, if they did not, were probably considered less safe

than children, we find that, in the majority of accusations, the injured party has been of this latter description ; and from ignorance on her part, the proof has been frequently defective, and required the corroboration of professional testimony.

With few exceptions, it may be said that the mere gratification of lust is rarely the impulse to the commission of this crime ; or, when so, probably the female herself has been to blame in encouraging or promoting its excitement. Women will go great lengths in their intercourse with men, while resolute as to stopping short of the ultimate act.

In the great majority of cases, therefore, the solemn oath of the female as to the particular nature of the assault will now be found the principal article of evidence ; but where medical testimony is required, the circumstances to be attended to are the following : —

A female under the age of puberty is not only morally indisposed, but physically unfit for sexual intercourse. She must, therefore, be subjected to it not merely by false pretences, but also by force and violence, painful at the time, and leaving traces of the nature of the outrage. These traces cannot well be mistaken in such a subject, if examination be promptly instituted. They are caused by the disproportion of the organs of generation in the respective parties, as the aggressor in such cases must be a man whose system is developed ; though

sometimes this developement may occur at a much earlier period than is usual. The law of England considers the crime of rape to be out of the power of a boy to commit who has not attained the age of fourteen years; and it may be proper to add, that if the female be under ten, her consent does not mitigate the enormity of the crime. Generally, the age of puberty in these latitudes is fifteen in the male, and about fourteen in the female, at which era very remarkable changes take place in various parts of the system of both.

Some discussion has been maintained as to the signs of the virgin state, in order to found an inference upon the circumstance of their presence or absence. But probably the attention of the medical man will be more effectually directed to the import of marks of violence about the *partes muliebres*, and the compatibility of these marks with their alleged cause; viz. the forcible application of the penis.

To complete the crime of stuprum there must be evidence of *emissio seminalis*: this is taken to imply the fact of *penetratio vaginæ*. It is a fallacious proof, however,—one that can hardly ever be established but by positive declaration of the female herself (unless *the moral condition* of the man immediately afterwards can be the subject of observation), and one that no medical man can verify. Laceration,* bloody

* Vide observation of the Ordinary of Newgate on this word, in the Appendix.

discharge, unnatural and unhealthy dilatation of the passage, accompanied with tumefaction of the labia, and marks of violence in the way of discolorations of the skin, will be perfectly consistent with the story alleged. The total absence of the hymen is no proof, in any female, of sexual intercourse; nor is its presence a satisfactory proof of uniform continence; but marks of a *recent rupture* of this membrane cannot well be mistaken by an intelligent practitioner. More stress is to be laid on the dimensions of the vagina, though natural and morbid causes may effect relaxation and dilatation of this passage without extraneous interference. Discharges from the vagina may, even in very young subjects, be innocently produced;* but in questions of gonorrhœal virus, a corroborating proof will be found by inspecting the person accused; for it is quite unnecessary to say, that *coitus usque ad emissionem* will not relieve him from the disorder, although it be communicated to the other party. Nor is the *emissio seminalis* necessary to the communication. Contact of the disordered parts with the mucous membrane of the female organs will be quite sufficient, especially if the virulent matter remain long enough to be absorbed, and produce its effects.

Of the case with regard to adult females, it is to be apprehended that medical men can give no better

* And in very young children, inflammation of the genitals is a *frequent* occurrence, terminating even fatally.

account than they themselves can as to the cause of interference with the integrity of the virgin state. It will also, in such a case, be exceedingly difficult to pronounce whether the female be *de facto* a virgin or not. All that we can venture to connect with her previous reputation will be—the rigidity of the vagina, absence of any marks of violence, and the presence of the hymen, which (taken together) amount to strong proofs of integrity; whereas—dilatation, laceration, tumefaction, &c., will favour a conclusion that some foreign body has been introduced into the passage. The ulterior event of conception is no proof of consent on the part of the woman. It takes place without her being any farther a party than her physical co-operation may be concerned. Her will and desires have no influence; and a female may be impregnated who has suffered even *severely* by the act of intercourse. It may be taken as a universal fact, that a female cannot be violated, in the true sense of the word, unless her powers of resistance be completely overcome.

COITUS CONTRA NATURAM.

The law exacts proof of emission to establish the capital charge. There is an obvious difficulty in obtaining this, as it can only be given by the party concerned, and an unwilling one is hardly conceivable. Should a medical practitioner be called on to verify

the charge, he must form his opinion from the appearance of the sphincter ani, taking care not to be misled by the presence of hæmorrhoids, and not to confound wounds or lacerations with excoriations — which are produced by a variety of causes. It is necessary also to be alive to the causes, phenomena, &c. of prolapsus. We shall dismiss this subject by declaring, that unless the outraged party be deprived of all power of resistance, (from what we know of the structure and economy of the organs concerned, the pain of constipated evacuations, and the difficulty of introducing suppositories, glyster-pipes, &c.) it is hard to believe that this vile purpose can be accomplished without co-operation on the part of the subject of it; but with consent, or in the absence of resistance, we fear it must be admitted to be *practicable*.*

* Had we not been well assured by a respectable citizen of London, who is frequently called to serve on juries, that accusations of the above nature are *frequent*, we should have passed the matter *sub silentio*.

IN THE CIVIL COURTS.

THE questions that arise in the courts of justice between subject and subject, the decision of which depends in a principal degree upon the evidence of medical men, are the following:—

Mental Alienation,
Mala Praxis in Medicine and Surgery,
Survivorship,
Personal Identity,
Duration and Signs of Pregnancy,
Life Insurance,

and (as being closely allied to this division of the subject) may be considered

Feigned or Imputed Diseases.

Upon each of these it will be necessary to hazard a few observations.

MENTAL ALIENATION.

Setting aside any formal consideration of the connexion of this subject with acts of a criminal nature, which not unfrequently demand the attention of courts of justice, it may be enough to state, that the

means of verification are the same, whether the process be of a criminal or of a civil nature, or whatever the intended issue of the verification may be. To lay down the law upon this subject is not our business; but in the application of that law the judge must be guided by certain information, which will have a more powerful effect when substantiated by professional opinion, than when left to be inferred from the untutored statements of mere witnesses to matters of fact.

Mental disorder is never precisely identical in any two cases; but, although men do not differ more in their physical conformation, personal marks, and intellectual character, than they do in the features of mental derangement, there are well-established and most conclusive indications of the existence of such derangement, applicable to, and discoverable in, every instance. The duty of the physician, when such cases demand judiciary investigation, is to verify the fact, speak as to the probability or hopelessness of recovery, give, perhaps, an opinion as to the propriety of the mode of treatment adopted, and assist juries in the display of the disorder. The method of cure is, of course, not to be described in a work of this nature.

By a madman, in the popular and even legal sense of the word, is to be understood—a person whose conduct is not under the control of his judgment, or whose judgment misdirects his deport-

ment. The derangement is often perfectly harmless, both to the individual himself and to those about him. Nothing may be more than absurd — sometimes, perhaps, ridiculous — it may amount to great eccentricity ; but there are many eccentric people who cannot be styled mad, or be legally deprived of the right to manage their own affairs.

It is often, very often the case, too, that a person insane upon some one or more especial subjects, will display superior correctness and propriety of thinking, speaking, and acting, upon all others. When this is the case, it is difficult for medical men to detect the existence of the disorder. It is necessary to have a key to the discordant string, which when struck will uniformly sound a note out of tune. Upon this ground, therefore, it must very frequently happen, that *non-professional* persons, familiar with the habits, peculiarities, and general conduct of the party subjected to inquiry, will furnish more satisfactory evidence than medical men.

Distinction ought to be established, in the minds of all jurists, as to the following varieties of mental disorder.

1. *Delirium*. — The actions and speech, the ideas and desires of a person *delirious* are often identical with those of the *lunatic* ; but delirium is always connected with, if not obviously arising out of

bodily disorder; and there are certain physical derangements which ought to be known to the medical practitioner, as ordinary causes of delirium. It is very temporary, evanescent even, in its duration; curable like the complaints with which it is combined, or dispelled when the cause of these is removed. By delirium we do not mean *mental aberration*; though mismanagement of the former may fix the latter upon the party subjected to improper treatment.

2. *Mania*.—Properly speaking, this is a disorder existing without any decided derangement of the physical organs or constitution. A man may be a maniac in perfect bodily vigour—in an undue degree of this quality—and to all ordinary observation subjected to no derangement of his functions. The practised eye, however, will detect indications of cerebral derangement; and the possessor of such an eye ought to be able to give the reason for his discrimination.

3. *Monomania*.—We should not be speaking correctly did we use this term as strictly synonymous with *melancholia*; but the two states are closely related. The *monomaniac* is generally a melancholic; and the latter is commonly the victim of some particular apprehension, perfectly unfounded. This disorder is, upon the whole, more hopeless than

mania: in the latter the danger is generally of violence being exercised upon others; but the *monomaniac* is his own burden, and frequently applies himself to the study of self-destruction.

4. *Lunacy*. — This is commonly a form assumed by *mania*, sometimes by *melancholia*, but never either by *delirium* or *idiocy*. The moon has no connexion whatever with it; and all that we find it necessary here to say is — that the subject of it has a disposition to mental aberration, which manifests itself periodically, either at regular or irregular intervals. This is the form of mental disorder which is commonly called hereditary. Lunatics are the people who are said to have *lucid intervals*—occasional remissions of the complaint, during which their conduct may be unexceptionable. But during these intervals they are no more to be considered *well*, than a person who labours under a tertian intermittent may be considered to be in health on the days when the ague does not positively harass him; or than a person subject to epileptic fits may be considered fit to be trusted in a dangerous situation between the occurrence of one paroxysm and that of another.

5. *Idiocy*. — A *defect* in the mental powers. It would be impertinence to aim at giving any instruction as to the method of proving this unfortunate condition.

In all the foregoing states there are certain symptoms, or physical signs, by which an intelligent practitioner will be correctly guided. He cannot erect an *idiot* into a man of talent (though a fool may be intelligent); he cannot have many opportunities of observing a *lunatic* without finding out the lamentable distortion in that person's constitution; nor can he go far in his intercourse with the *melancholic madman* till he detects the force and nature of his malady: the *maniac*, in the full sense of the word, commonly gives little scope for the exercise of ingenuity in the developement of his case; and of *delirium*, every old nurse is a competent judge.

But a person, originally free from all taint and tendency to any of the foregoing varieties of mental disorder, may have any of them fixed upon him for life by a variety of incidental causes (either of an accidental or morbid nature), which the medical practitioner should, in general, be acquainted with; though sometimes it is impossible to verify their existence even by *post-mortem* inspection.

MALA PRAXIS.

Humanum est errare; and mere errors are not crimes. If a man has complied with the requisitions of the law of society, in the pursuit of that

knowledge which must be the criterion of his pretensions to deal with the maladies and accidents of his fellow-citizens, an occasional, and perhaps even a very frequent, failure in his *honest* endeavours to do good, ought, in justice, to be, and, in fact, always is, visited with lenity. It therefore follows, that a medical practitioner is not to be consigned to ruin merely on the score of mediocrity of talent. This humble qualification is desirable in those who rank themselves in a profession, where the possession of it gives an immense advantage over others, who, though endowed with every acquirement, are, in this respect, originally defective. But mediocrity of talent may be compensated for, to a considerable extent, by diligent application; and if a medical practitioner has pursued the proper course of study, and sustained the established ordeal through which he ought to pass to the exercise of the healing art, he is in the eye of the law a qualified person.*

Nevertheless, there have been many occasions on which persons of this description have been sued for

* Of *empirics* (Anglicè QUACKS) we shall merely observe, that their success is an indelible disgrace to those who are especially appointed, by royal charters and acts of the legislature, to *put them down*. Of the medical metropolis of England, it is perfectly appropriate to say, in the words of Shakspeare: —

“ Fie on ’t, O fie !

’Tis an unweeded garden ”——

damages by their patients ; and not a few might be quoted in which they have been the subjects even of *criminal* accusation. Justice compels us to add, that these cases have been chiefly referred to the department of SURGERY. It is not often that a physician, in the ordinary acceptation of the term, (by which, of course, we mean those who restrict their attention to maladies which forbid, or do not require manual interference), can be sued in courts for *mal-practice*. The *good* they do is oft interred with the bones of their patients ; and (as in reason it should be) the *evil*.

But the SURGEON can rarely rely upon such a hiding-place. If he draws the sound tooth instead of the carious one — couches the bright lens instead of that which is clouded with a cataract—amputates the healthy leg, leaving the white swelling intact upon the other — punctures the gravid uterus under the belief that he has a desperate case of ascites to deal with — mistakes a dislocation of the shoulder for a common muscular contusion — and tells a man with a broken leg that the best thing he can do is to walk four or five miles before breakfast, and the same distance after supper,—we say, if things of this kind happen, the person who causes them may indeed go to bed without fear of *ghosts* ; but the *civility* of the law will, in all likelihood, disturb his repose. The toothless patient may bite him severely in a court of justice—the blind man may see his

way clearly enough through an action for damages—the lame leg may do very well to support a similar purpose—the uterine mistake may be pregnant with expensive consequences—the damaged shoulder may yet be strong enough to sustain the weight of a plea—and even the smashed nether extremity may muster strength enough to hobble into the witness-box, for the purpose of being exhibited in evidence.

So much for *mala praxis* : more upon the subject can hardly with propriety be introduced here.

SURVIVORSHIP.

This is a question which involves the descent of property, and may be disposed of, on the present occasion, in very few words.*

Where persons are cut off by one common event, either of an accidental or of a criminal† nature, a question may arise as to the right of inheritance.

* In my “ Principles of Forensic Medicine ” (page 510, third edition,) I have entered upon the subject to some extent. I beg to refer readers of either profession, medical or legal, to what they will there find ; and to say, that I have acquired some additional facts on this curious and important subject, which I shall take a convenient opportunity of laying before the public.

† As in the recent instance of the murder of *Langley* and *Joliffe* at Portsmouth.

Such a question has been agitated in the supreme courts of this country ; but it was found impossible to come to a decision.*

In all such instances, an intelligent MEDICAL JURIST ought to be of the greatest assistance to the court ; and, if employed to make his investigation under fair and proper circumstances, he can hardly fail to throw satisfactory light upon a subject of this nature : but medical men *in general* do not study these matters ; and on occasions of this, and of other collateral natures, they betray even less intelligence and acumen than the general body of their fellow-citizens.

Survivorship is also a question under the provision made by the law of this realm as to *the tenancy by courtesy*. The only case we know of that ever came to a decision in the supreme courts, was influenced by a very ridiculous opinion given by two of the most eminent physicians of London (one of whom is now dead), which will remain for ever as a blot upon their pretensions to scientific research, and the possession of *common sense*.†

* In re Stanwix.

† See “ Principles,” *ubi suprà*.

PERSONAL IDENTITY.

This may be considered as one of those *mixed* questions which relate to the business of the *criminal* as well as to that of the *civil* courts. It arises sometimes with relation to living parties; but not unfrequently to the dead. It has happened, on a variety of occasions, that innocent individuals have been arraigned at the bar of public justice for crimes committed by others, who resembled them so closely that witnesses have been positive as to an identity which has subsequently been disproved. Again—there have been curious histories of imposition, in which persons have come forward and claimed the property of parties long missing, alleging that they themselves were the individuals lost sight of; and, either proving successful in advancing these pretensions, or giving rise to curious and interesting disputations. Lastly—where murder has been alleged to have been committed, and the body of the deceased has been supposed to be found long after the event, it has been necessary to have recourse to medical assistance for the purpose of reconciling the history of the case with its actual aspect.

In the case of *living* persons, the medical philosopher (if possessed of superior acuteness) will often be able to throw light upon the inquiry, by some ingenious application of scientific knowledge

to a close scrutiny. Perhaps it may be laid down as a general proposition, that *no two individuals of the human species are precisely alike*; but, in order to verify the dissimilarity, it may be necessary to carry the investigation beyond superficial and obvious characteristics.

As to the identification of dead bodies, where the countenance is already so disfigured that acquaintances cannot recognise it, and the changes induced by the advance of the putrefactive process render other marks obscure and fallacious,—medical knowledge may probably go the full length of ascertaining the sex, the age, the dimensions, and a few peculiarities of structure, even where nothing remains for examination but the bones.

PREGNANCY.

The object of the *civilian*, in his inquiries on this subject, relates to *female reputation* and *legitimacy of birth*. Daily illustrations on the practical importance of this sort of knowledge occur; and the highest tribunals of the country have been occupied in the investigation of matters of this description.

The medical man ought to be able to inform the legal inquirer, in the most accurate manner, as to the *reality* of the pregnant state. No practitioner in England can *possibly* be mistaken on this point, provided he applies the knowledge incumbent on

him to be possessed of, in a proper and intelligent manner. The physician or surgeon who mistakes the pregnant for any other state, forfeits all claim to confidence in his judgment and acumen.

We cannot possibly admit of an exception in favour of moles or false conceptions, unless in the most early months of the supposed or apparent impregnation; and even then there can be no great hazard of being puzzled, because the obvious duty of the party called upon for an opinion will be to recommend *delay*.

To verify or disprove the reality of this state is a very frequent duty on the part of a medical man; and though the event of *conception* is one that deeply interests all the individuals concerned, it is curious how widely even physiologists have differed about the truth of certain very simple and easily ascertainable facts.

It may be enough here to observe, that pregnancy cannot take place without sexual intercourse; that it often does occur where this act is supposed to have been imperfectly performed; that it may result where the female has neither consented to the act, nor had any pleasure in it; that it is generally matter of suspicion only for the first three or four months; that after this time no medical practitioner who knows his duty can be deceived, if he performs it properly; that almost any one sign of this state, taken by itself, may be the symptom of a disordered

state of the system ; but that the concurrence of the whole signs, in the absence of evident reason to believe in the existence of disease, will lead to an accurate conclusion.

The pregnant state is known by very positive indications, which, if correspondent to the imputed or admitted history of the party, will always be assigned to the right cause ; but superficial examiners and credulous people are not unfrequently duped : on the other hand, it must be admitted that women have been reproached with illicit intercourse when there was no foundation for such a charge. The most frequent occasions for professional interference are those where married women believe themselves to be “ *in the family way* ” when no such thing is the case ; and they often persist in this profession or belief till the alleged state of the affair extends to an ideal protracted pregnancy—an event that does not occur once in many thousand instances.

Fatal consequences have too often resulted from surgical interference in cases of pregnancy, supposed to be indications of dropsy ; but the man who plunges a trocar into a uterine tumour ought to be indicted for what is termed *manslaughter*.*

* *Manslaughter*. There is no impropriety whatever in applying this term to the imprudent, though unintended slaying of *females*, in such a way as that alluded to in the text.

On the *duration* of pregnancy, we shall aid the legist by a more particular statement.

Referring to what will be found under the head of *infanticide*,* concerning the various periods which mark the growth of the child, it will here be sufficient to say, that the full term of human pregnancy is nine calendar months.

Below this, we need not repeat the deviations from the ordinary course, unless we say that a child cannot be reared that comes into the world before the termination of the seventh month.

Beyond it there has been great difference of opinion as to the truth of the matter ; but the author has no sort of hesitation in declaring his conviction—that women do exceed the ordinary term of gestation ; they certainly may carry a foetus to the end of the eleventh, and even into the twelfth month. Further than this it is to be apprehended that evidence will be found deficient. In these cases, married women, the mothers of families, are the most credible witnesses ; for their professional *accoucheurs* can only give evidence of what these parties may have told them.

* Page 70.

INSURANCE OF LIVES.

The part which the medical man performs in matters of this nature respects the verification of the state of health (and consequently of the probability of the duration of life) in the party applying for the benefit of institutions, of novel date, though of the greatest utility.

Application being made to the insurance office for the grant of a policy on the life of a certain individual, he is required to refer to some friend acquainted with his habits and constitution, and also to some medical man who can speak to the state of his health. To this latter, questions are confidentially put, to the following effect:—whether the party proposing insurance labours under certain diseases, whose influence in shortening life is established by almost general consent; such are (among others) pulmonary consumption—gout—apoplectic attacks, or predisposition—hernia—epilepsy—lunacy—hepatic disorders—dropsy, &c. &c.; besides which, the medical referee is required to give a reply to the general question, whether the constitution of the party is, upon the whole, a sound one, and eligible for assurance. Although the discharge of this duty is neither restricted by any oath, nor is in any degree compulsory (unless when placed in the hands of medical men who hold appointments under

the assuring companies), the instances of wilful deception have been exceedingly rare. But mistakes will occasionally happen; and if the report given upon the state of health of the party assured be open to objection, it may be important to the medical referee to be able to substantiate that report. At least it will be necessary for him to shew that he took all allowable, if not practicable, methods to verify the state of the case; and that he was not privy to any ailment under which the insuring party laboured at the time of his declaration.

The resistance of insurance companies to the payment of sums of money claimed by the relatives or representatives of deceased parties, has been by no means a rare occurrence; and when such litigation arises, reference must be had to medical opinions.

Somewhat allied to this subject is the duty of army medical officers in the examination both of recruits, and of old soldiers proposed to be dismissed the service on account of bodily infirmities; but as these are matters that seldom, if ever, come under the cognisance of the civil magistrate, it will be enough, in the author's opinion, to refer to his instructions already published.*

* *Principles, &c.* p. 440, 3d edition.

FEIGNED AND IMPUTED DISEASES.

This has been made a very amusing topic by a variety of writers. I may refer to my own observations,* and to those of Messrs. Hennen and Copland Hutchison, for full information on the subject. Sometimes an impostor of this description may attract the notice of a magistrate; but we commonly meet with a prevalence of such practices in military life only. Army and naval hospitals used to furnish numerous examples of every species of deception; but their superintendents have had their powers of detection much improved by familiarity with the nature of the tricks attempted to be played, as well as by the instructions they have been armed with by those who have seen the practice on such a scale as to enable them to lay down rules for guidance, deduced from a very extensive course of experience.

But although *feigning* may rarely attract the notice of the civil authority, cases will arise in which imputation may be very unjustly cast upon parties who by no means merit it; and it may be of the greatest importance to them to be able to refute such an allegation. In this division of our little work we can speak only in general terms; but in the course of those investigations which have fallen

* Principles of Forensic Medicine.

within the province of the *ecclesiastical* courts, we shall find that a very gross and cruel imputation has been sometimes raised upon mistaken grounds.

The principal diseases, disabilities, and infirmities, which we find to be feigned, are — epilepsy (fits), hysteria, palsy, blindness, deafness, dumbness, spitting of blood, bowel complaints, retention of urine, pregnancy, suppression of the menstrual flux, general debility, rheumatism, &c. &c. ; and all these, together with some others, may be laid to the charge of those who are perfectly free from them. The only rule that can possibly be laid down must consist of warning to all but medical men, that they may expect to go wrong if they undertake the developement of the real state of the case ; while, on the other hand, they ought to know their business better than to be the subjects of successful imposition.

IN THE ECCLESIASTICAL COURTS.

THE questions of validity of marriage and of testamentary dispositions, belong, in most Christian countries, to the jurisdiction of the church, which, in England, delegates to certain authorities in the legal profession the power of managing these matters, in the name or on the part of the diocesan.

IMPOTENCY.

The validity of the marriage contract regards either the propriety of allowing parties to enter upon, or to continue in it. Of course, under the latter view of the case is included the question of divorce. In this country the dissolution of marriage is rarely required, excepting on the ground of adultery—a crime that can never be established upon medical evidence. We have, therefore, no occasion here to enter upon the subject.

As to physical circumstances, of a nature objectionable to entering upon the state quoted, or which render it null after it is entered upon, they are chiefly, if not exclusively, referred to *impotence*, which may be found in either sex; but in far the

great majority of instances is the stigma of the male. Of women, there are few instances where incapacity to copulate has been proved, though *sterility* is common enough among them; but *sterility* and *impotence* are very different defects — the latter forming some impediment to sexual intercourse, but the former often existing where the latter appears to be in all respects perfect. The only established case of feminine impotence with which we are acquainted, is either an impenetrability of the vagina, or its misplacement in such a manner as to defeat the practice of *coitus* altogether. It would appear, however, that the vagina may remain unnaturally rigid through inability on the part of the male, whose duty and privilege it may be to perfect the great purpose intended by nature in these mysterious and delicate circumstances.

Singular as the assertion may appear, there have been instances of medical men so ignorant of the structure of the external female organs of generation, as to be unable to describe them, or even ascertain their state. The hymen has been a source of puzzling to many; some having asserted that it is present in all virgin females; while others have, with still greater absurdity, declared that it forms no part of the female structure. The truth is, it has been observed at all periods of life in women who have had no intercourse with the other sex; and some-

times itself, or a preternatural barrier of a fleshy nature, is found at the orifice of the vagina, giving rise to painful retention of the menstrual flux at the period of puberty ; and even offering an impediment to connubial intercourse, of a nature so insurmountable in the ordinary way as to demand the interference of remedial art. In some cases conception, pregnancy, and labour, have taken place, while such a membrane continued in its original situation, offering an obstruction to the passage of the child, which it was necessary to remove before delivery could take place. But this sort of obstacle does not amount to impotency, for which there can be no plea when the case admits of remedy by the application of professional skill.

Women may become impotent — that is, unable to join in connubial intercourse—by accidental causes ; and some of these, attendant on certain disorders of their peculiar organs, or on the event of an untoward child-birth, are known to, or should be recognisable by medical men. If these events occur after marriage under an ordinary state of fitness for it, the man who has a proper regard for his wife will take care to conceal her misfortune from impertinent scrutiny ; and how far it may be lawfully practicable to sue for a divorce, it is not within our province to determine. If called upon to describe appearances, estimate their importance, and give an opinion on

these matters,—there ought to be little difficulty in performing such a duty.

There is more ground for a charge of *impotence* against the husband; for there are causes by no means supposititious that must have the effect of altogether disqualifying him for the matrimonial engagement.

The first we shall allude to is *an error as to sex*. Strange as it may sound, there have been females who believed themselves to be men; and individuals who have been erroneously supposed to partake of the distinctive organs, and to be able to perform the proper functions of either sex. These have from time immemorial been called *hermaphrodites*, and have occupied a place in the list of realities, from which they have been of late removed. As far at least as the human species is concerned, there are no such phenomena. However unequivocally any individual possessing the radical peculiarities of one sex, may display a considerable share of the attributes of the other, to one or other that person must belong; and though nature occasionally seems to sport with the structure and aspect of the peculiarities in question, an intelligent examination will always lead to inferences highly unfavourable to conclusions as to hermaphroditism. Thus, when a female is said to possess the male organs of generation in addition to those belonging to her own sex, we may expect to meet with preternatural enlarge-

ment, or perhaps with some other peculiarity in the clitoris, as also a form of the pudenda approaching to that of the male scrotum; and if, on the other hand, a predominant male shall be reputed to possess also a vagina, there may be a fissure *in situ* between the testes, which, upon careful inspection, will be found to extend to no great depth, to lead to no uterine orifice, and to possess no power of imparting sensual gratification, much less of performing the natural and essential operations of emitting urine and evacuating the menstrual flux. In the one case, the clitoris is impervious, the urine passing through the urethra; while, in the other, the false vagina terminates shortly in a *cul de sac*. As to irregularities in the articles of the beard, breasts, form of the hips and shoulders, voice, and even propensities, they prove nothing concerning the principal point.

The second condition of impotence on the part of the male is *eunuchism*. We know little of this in our country, but as an accidental event. It is one, however, that may present itself for investigation; and the man who is deprived of the external organs of generation is clearly an objectionable husband. There are one or two points, however, for consideration, that should be taken into account. Total want of the penis (which *may* be an original defect, but is more frequently the result of an accident, or of a surgical operation), is conclusive as to the

inability of the man to impart that enjoyment which the female who becomes his wife has a right to expect ; while *partial* loss may require consideration. As it is not essential to the end of matrimony that the penis should be of definite dimensions, neither is it necessary that it should be whole and entire ; but it ought to possess at least a portion of *the glans*, in order to insure the degree of enjoyment necessary to the consummation of the act of intercourse ; and it must be *perforated*, otherwise the act of coitus cannot be completed, though the mere enjoyment on the part of the female may not be materially diminished, her pleasure not depending upon the *ejaculatio seminis*.

Without such ejaculation, however, there can be no impregnation ; and he who cannot pursue the object this length is to be considered *bond fide* impotent. Even where the penis is distorted, or so deformed as to have the external orifice in some other part of the urethra than in the extremity of the glans, provided it is still capable of being introduced into the vagina, and the *semen* can be deposited there, it would be in the face of well-known facts to draw an inference of impotence from such distortion or deformity alone.

In the proper sense of the word, *eunuchs* are those who are deprived of both testicles. In countries where there are peculiar employments for persons thus disqualified, the testes are either rendered inef-

fective by being crushed, and their texture thereby destroyed at a very early period of life, or they are extirpated by a surgical operation. The latter is considered the most effectual method of securing the intended effect; as, in the former case, some imperfect structure remaining, there is a possibility of a degree of activity. The testes are the organs that secrete the seminal liquor, the source not only of sexual power, but of the impulse to use it; so that if these are taken away before the period of puberty, at which time the secretion in question commences, the individual is through life a stranger to those desires, as well as energies, which belong to the perfect male; or, if exceptions to this remark are met with, they arise out of circumstances of an incidental nature. If the testes are removed after they have been called into operation, and after the *man* has experienced the force of their function, the desire for sexual intercourse may remain, but the power of accomplishing it is gone.

The proper situation of these organs is in the scrotum; but they do not originally occupy that part of the body. They descend but a short time prior to the full period of birth; and in some cases they are long, and even during the life of an adult, retained in the abdomen,—so that the more apparent want of testes *in situ proprio*, is of itself no proof of their deficiency. The powers of such persons are in no known degree diminished, and their intercourse

with the other sex will prove the fact of their vigour. Short of this, however, proofs of an indirect nature may be drawn from their history, and the absence of marks of interference with the scrotum.

Marriage with a eunuch is of course null and void; but when one testicle only is wanting, the individual is to be considered quite fit for the purpose, if the other be healthy; and the dimensions of any of the organs of generation are no ground of disqualification, as those which are small may be equally valid for the ends of nature with others; and there is no standard of comparison.

A man may possess all his ostensible organs, and display no cause of incapacity, and yet be impotent, in the full sense of the word. There are morbid causes for this, with which every medical man should be acquainted; but there sometimes exists a sort of moral influence over the physical energies which defeats the particular purpose in view. This is generally, however, of a temporary nature; and is a case beyond the province of the physician.

It remains only to add, that in either sex the cause of impotence may be removable; and where it is so, it should be in the power of the medical man both to point it out, and to render the assistance required. Society labours under a variety of mistakes with regard to this matter; and parties, more frequently than the public is aware of, subject them-

selves to serious inconvenience through false notions of delicacy. Recourse to professional opinion is by no means *exposure*.

TESTAMENTARY DISPOSITIONS.

No last will or testament can be valid if the testator laboured under disorder of the intellectual faculties at the time of its alleged execution. It may, therefore, be necessary to establish by medical evidence, that such was or was not the case. By referring to the article headed “ Mental Alienation,” it will at once be seen that a person in such a state, as is there alluded to, cannot dispose of his property, because the law very properly takes from him all power of managing it while he continues in such a state ; but the mind is often affected when the body is the subject of severe disease, in a secondary and temporary manner, during which the individual is equally unfit to be the director of his own affairs as in the other case ; besides which, the effect of physical disease or coporeal injury is often such as to deprive the person of all moral energy whatever. Such is the case in apoplexy, injuries of the head, &c., producing coma or stupor ; and in other diseases that affect the sensorium, and give rise to what is termed *delirium*. Severe and fatal disorders, on the other hand, frequently occur,

in which the mental faculties are in no degree obscured; and a will executed by a person in these circumstances must be held as valid as if drawn up in perfect health of body as well as of mind.

The medical witness can prove the real state of a party subjected to his observation, and also the probable effect of any particular disorder (under which it may be alleged that he laboured), either upon his moral or his corporeal faculties.

The two following subjects do not belong exclusively to any court, but may be matter of consideration before either a criminal or civil tribunal.

OF THE DEAF AND DUMB.

Persons in, or pretending to be in, this situation, may become subjects of notice under almost any circumstances. They may be arraigned for crimes, produced as witnesses, or be parties in a suit. They have the same rights of citizenship as others; and there have been abundant instances to shew that they are capable of being as useful members of society. This, however, depends in great measure upon their natural apprehension, and also upon a course of education peculiarly adapted to their circumstances; by which it is not a difficult matter to make them equally available for judiciary pur-

poses with those who do not labour under the same disadvantages.

These two defects being commonly found co-existent in the same individual, it is proper to observe that the real one consists in the absence of the faculty of *hearing*. It is by hearing sounds that animals learn to imitate them; so that the organs of speech themselves may be perfect enough, though not called into action: if hearing could be restored, speech would quickly be acquired; and it is pretty well established, that the real impediment has been sometimes found in a curable malformation or disease of the external ear.

Examination into this matter should always be instituted before the party is consigned to a rank among the unfortunate, to which he may not belong.

MEDICAL EVIDENCE.

Having already written a considerable volume on this subject for the benefit of the medical profession, perhaps I may now discharge my duty, in great measure, by referring those who wish to become acquainted with a more fully expressed form of my ideas, to the work in question.* But I have a few

* “An Analysis of Medical Evidence,” &c. T. and G. Underwood, Fleet-street.

requests to make of the legal portion of my readers, which, I trust, will not be listened to in vain.

I beg, *in the first place*, to protest against their considering what is ordinarily called *experience*, as entitled to greater credit than the knowledge possessed by a member of the profession who (though young) may be a better authority than the mere man of experience. Lawyers (at least those who attend to the criminal department) do not require me to impress upon their minds, that a man may have had the experience of nearly half a century, and yet break down in a court of justice, if confronted with a junior of studious and inquiring habits.

In the eye of the law, one man of good character is as credible a witness as another, though in point of rank and of professional success there may be a difference. There are certain rules, opinions, general facts, principles, practices, &c., which are universally known, established, and acted upon, by common professional consent, which one properly educated man knows as well as another; and his evidence should therefore be as valid, and, I believe, is considered as valid, as that of any other.

For my own part, I desire to say that I have had great personal *experience* of the nature, of the treatment, of the perplexities, and of the real character of diseases; I have paid no ordinary attention to

anatomy, in its relations rather to the obscurities of, and deviations from, the common structure of the body, than in its ordinary elementary shape, though I will not yield to medical men in general even there ; I have read authors, ancient and modern, foreign and domestic ; I have maintained, and will maintain, the habit of interchanging ideas with my professional friends ;—and from all this I desire to deduce the inference, that the studious man ought to rank above the incidental observer, who may or may not be able to take advantage of his opportunities, and who may pass through a very long course of *experience* without acquiring a particle of *wisdom*.

APPENDIX.

Illustration of an important application of Medical Knowledge to Judiciary Purposes, as recently given by the Author. Extracted from the LANCET, Nos. 294 and 295, for April 18th and 25th, 1829.

“FORENSIC MEDICINE.

“*Case of the late Mr. Neale and Butler the Soldier, Medico-legally considered.* By JOHN GORDON SMITH, M.D., Professor of Medical Jurisprudence in the University of London.

“IN placing these articles in the hands of the Editor of *The Lancet*, I beg to remark, that they are my own composition, and go forth to the medical world upon my own responsibility. One of them was intended to have formed part of the defence of Butler (tried at the Old Bailey on Friday) had it been necessary;* and they altogether contain my professional view of the medico-legal bearings of his case, as originally formed without any consultation or corroboration whatever. In saying this, I am not actuated

* “No proper account of the trial has been published; but it is pretty well known that the case was stopped after the cross-examination of Dr. Dennis and Mr. Brookes.”

by a vain desire of distinction ; but having watched the progress of this triumph of *truth*, *science*, and COMMON SENSE (over ignorance, conceit, and *stupidity*) ; and having done almost all that an individual in my circumstances could do to *ensure* this TRIUMPH, I feel that I am only discharging my duty in publishing the real history of this most extraordinary occurrence.

“ Up to Monday evening, the 6th instant (upon which occasion the discussion took place in the Medical Society), I merely felt, in common with other gentlemen of our cloth, that there was more than a mistake as to the prisoner’s guilt, arising out of a most absurd statement, which had been sanctioned by considerable authority ; but finding all ground of diffidence in my own view of the matter removed by the course of that discussion, I next day waited upon Mr. Sheriff Copeland, and explained to him how the *medical* evidence against the unfortunate man appeared *certain* to turn. This excellent gentleman (of whose conduct it is impossible for me to speak in terms of adequate praise), not only gave me a patient and encouraging hearing, but voluntarily promised to furnish the pecuniary assistance necessary for the poor man’s defence.

“ Having succeeded so well in this quarter, I thought it highly probable, that if I could get at the prisoner’s real story, something confirmatory of my own impression might be elicited, and a stronger case made out in his favour. With this expectation, I accompanied his solicitor to Newgate,* and had an interview (the first) with him. The result was *a thorough conviction on my part* that Mr. Neale

* “ I avail myself of the opportunity to return thanks, in the name of my profession, to Mr. Teague, for his able, indefatigable, and disinterested conduct on this occasion.”

had died of *apoplexy*, under circumstances peculiarly conducive to its occurrence.

“ As time advanced, I had the satisfaction of ascertaining that the united voice of the profession was in favour of my undertaking. We (for I was no longer single in the matter) heard of observations which had been made at a distinguished *conversazione*; and we learned, with at least as much *disgust* as astonishment, that the author of certain erroneous opinions had expressed his determination to abide by them, merely because he had once advanced them; but, happily for his reputation, this intention was afterwards altered.

“ Impressed in the manner described, I resolved to make my own appearance in court, and advised the solicitor to subpoena Drs. Paris, Johnson, Wilmot, and Mr. Callaway, knowing that the opinions of these parties were consonant with the justice of the case. Other practitioners *volunteered* their assistance, in a way that will redound to their everlasting honour. But in saying that *these* gentlemen *volunteered*, it would be dishonest to conceal, that (with the exception of Dr. Paris) every one was eager to come forward. This gentleman complained of the hardship; and, no doubt, it *is* a hardship, that the time and talents of professional men should be laid under such heavy contribution, without fee or reward.

“ It might not become me, even if I had it in my power, to relate the course of examination of the two medical witnesses produced in support of the prosecution.* But if an accurate report could be obtained, I am sure it would furnish us all with a highly important lesson. I shall merely

* Mr. Brookes was not asked a single question by Mr. Clarkson, the prisoner's counsel; his own admissions rendering that quite unnecessary.

observe, that, as far as I have been able to learn, (and I have taken some *pains* to learn it), there is not an individual in whose mind there now remains a shadow of doubt as to the prisoner's innocence of the dreadful crime laid to his charge, though from the time of the occurrence down to that of the trial, perhaps there were but few, *out of the profession*, who entertained any doubt of his guilt ; but I may with some consistency add, that as one professing to teach *the art of giving medical evidence in courts of justice*, I have seen nothing on the present occasion but a new instance of the necessity of *learning* this art. Let any one read the evidence given on the coroner's inquest, and afterwards by the same parties on the trial, and if he (by believing *both*) can arrive at any conclusion than that *black* must be merely another name for *white*, I shall give up *Forensic Medicine* altogether, and set about the task of forgetting all I have been endeavouring to learn concerning it.

" I shall carry this egotistical narrative no farther, hoping the accompanying papers will be found instructive, not only by the *juniors*, but by some of our *SENIORS*, in the profession.

" CASE.*

" Dr. Dennis appears to have been the first professional person who saw the body of the deceased ; but it seems that he entered at that time into no further examination, as to the state of the case, than was necessary to ascertain the fact of his death.

* This article was appended to the intended defence (which was not required), and would have been read in court, under the avowal of the prisoner that he had adopted it from a medical gentleman.

“The next professional person who saw the deceased seems to have been Mr. Kirton, who, in his evidence given before the magistrates at the final examination, admitted that he *expected* to find that the deceased had died of apoplexy, in consequence of being told that he had come home intoxicated, evidently considering this fatal event to be a probable consequence of intoxication; nor do any suspicions as to violent interference appear to have been roused on the part of this witness, until he heard that the deceased was brought home by a soldier, who had robbed him of his clothes.

“No further interference seems to have taken place, on the part of the medical profession, until the meeting of Dr. Dennis, Mr. Brookes, and Mr. Kirton, for the purpose of making a judicial examination of the body; and a report of the appearances then discovered has been laid before the public. This report has been the subject of great dissatisfaction, and even of discussion, among medical men of eminence and reputation, and does not appear to contain a single statement which (however true in point of fact) will not admit of explanation according to the ordinary phenomena of the too familiar event of death by apoplexy connected with intoxication; while all the alleged marks of violence are themselves susceptible of satisfactory explanation in another and more natural way. These views are rendered the more clear and satisfactory, from the circumstance of the unfortunate deceased not having been attended to in a proper manner when brought home in a state of so very alarming a nature.

“It may here be proper to state (what every intelligent medical practitioner may safely be called upon to substantiate), that apoplexy is frequently the disease of early

life — that intoxication is frequently an exciting cause of it — that the influence of such a cause will be promoted by suffering a person in the state described as having been that of the deceased to remain so neglected, so strangely and scandalously neglected, as it is proved he was—that additional force will be given to such a cause by the presence of ligatures on any part of the body, and most unquestionably by the unrelaxed pressure of a double herniary truss, whereby it is probable that the large blood-vessels in the abdomen were subjected to mechanical obstruction—that in such perilous circumstances, the system being generally excited, and the circulation of the blood going on in an irregular manner, such an event as a fall must be of the most untoward nature, and would particularly favour the tendency to produce the disease already specified, viz. *apoplexy*.

“With regard to the statement signed by Messrs. Dennis, Brookes, and Kirton, it is to be remarked, that the livid appearances described would present themselves almost universally in the parts of dead bodies which are lowest in regard to posture at and after the time of death, when the fatal event takes place in what may be termed the healthy state. Thus, if the deceased had been lying on his right side at the time of his death, and still more certainly if after death the body retained that posture till cold, the ordinary and natural consequence would be such a settlement or stagnation of blood in the superficial vessels of the subjacent parts of the body, more especially in parts so near the centre of circulation as those described in the aforesaid gentlemen’s official statement—viz. the right ear, neck, throat, and shoulder—as would produce the exact livid appearances described. Dr. Dennis and Mr. Kirton have

both deposed that they found the body cold when they first saw it; and although it is impossible to say how long a body may, after death, retain the warmth of the living state, the fact of coldness having taken place must prove that death could not have occurred within a very *short* space of time.

“ *A distortion of the nose* has been described as having been necessarily caused by forcible compression with the thumb and fingers; but such a distortion may be referred to other causes, and might even be produced after death. To cases in illustration of this assertion it would be easy to refer. Indeed, the vital elasticity of the cartilage of the nose will restore it to its natural form, if the pressure be removed during life; whereas, after death, the parts lose their elasticity, become stiff, and maintain a variety of unnatural positions into which they may have been forced, and afterwards so retained. The remark here applied to the nose is equally applicable to the state of the case in other parts of the body; but even had the pressure in question been made in the way surmised, it ought to have been ascertained by careful dissection of the nasal passages, (which does not appear to have been thought of,) that such compression could have had the effect of causing suffocation by that modification of it called *stifling*; for many persons breathe freely through one nostril only, and there are probably few in whom both these passages are either symmetrically, or effectively alike; and as it is positively asserted, that *the left nostril was scarcely pervious, while the right was AS USUAL*, the question would be but fair — what was the “usual” state of the nostrils of this person prior to the event in question? and why were not parts accurately examined, and injuries, or *supposed* injuries, or marks sup-

posed to indicate violence, traced from their external signs to their interior relations to, and connexions with, parts essential to life?

“The whole of the appearances discovered, or described as having been discovered, in the brain and its appendages, most satisfactorily prove the occurrence of APOPLEXY, but nothing else. This is a disease to which certain irregularities in the structure of these important organs will favour, if not create, a tendency; and irregularities of a most important description are distinctly referred to. The tumours spoken of as being about the size of marbles, were morbid and dangerous; inasmuch as they must have impeded the regular flow of blood through the parts in which they were situated, and were obstacles to its free transmission in case of an unusual flow—the natural consequence of the strong excitement given to the circulating system, by the stimulus of wine and spirituous liquor. Without entering upon any technical description of the apoplectic state, it may be sufficient to observe, that few more satisfactory accounts of the genuine nature of this disease are to be found upon record than the appearances described as having been presented on opening the head of Neale. Indeed, it cannot be altogether impertinent to repeat, that the circumstances in which this man was placed were (to a degree of perfection not very common,) favourable to bring on the apoplectic state.

“No importance whatever is to be attached to the appearances described as having presented themselves in the viscera of the thoracic and abdominal cavities. The congestion of the lungs was obviously a part, parcel, portion, or extension, of the apoplectic state. A person thus affected, lying almost on the bare floor, with a small pillow under

his head, would be in a posture exceedingly unfavourable to his safety. It would have struck a reflecting medical jurist, on seeing a body in such a situation, and upon learning the historical circumstances of the case, that apoplexy was more than abundantly sufficient to account for every appearance presented on the occasion, including even the alleged distortion of the nose.

“ It is also unquestionable, that whatever covers the mouth and nostrils will prevent the access of air to the lungs, whereby suffocation will be induced, if the impediment remain for even a very short time. Persons die so frequently *in their beds* from apoplexy, brought on by excess in eating or drinking, that such an event is no matter of wonder whatever. It often happens, that the disease is favoured, and its fatal termination ensured, by the face being buried in bed-clothes, or being turned downwards. In such a situation, the sufferer, being rendered insensible and incapable of changing his posture, perishes ; while prompt assistance might save him from what, in the circumstances described, may be quoted as almost inevitable consequences.

“ Mr. Brookes has said, that the blood in the body was every where in a fluid state—a circumstance which, he says, he never found in a case of *natural* death. That the blood was as Mr. Brookes describes it, no one will doubt ; but the inference he has drawn is unwarrantable, while his alleged experience is at variance with that of medical men in general. Many cases could be quoted, in which the person died a *natural* death, where the blood has been found exactly as it is described to have been in the present instance ; and, indeed, the risk of impeding *post-mortem* examinations by letting out the blood, is so very generally

impressed upon the minds of those who perform these operations, that care is universally taken not to wound the large vessels in opening the cavities of the body. This statement will be supported by evidence on the part of a lecturer on medical jurisprudence, who, a very few days ago, was present at the opening of a man that died under circumstances almost incredibly resembling the case of Neale, and which gave rise to a coroner's inquest in the borough of Southwark.

“ In a most unaccountable manner has stress been laid upon *the appearance of the mouth* in this instance. In cases of natural death, after continued and debilitating disease, the appearances alluded to are very commonly met with ; for here there is a general relaxation of the muscular fibres, in which the muscles, whose function it is to suspend the lower jaw, participate ; so that, by losing their power, the weight of the jaw preponderates, and the ‘ ghastly’ appearance, which has been so inconclusively alluded to, will take place. While in death, in the healthy state, the reverse frequently (perhaps even generally,) happens.

“ It has been said, that snoring was recognised on the part of the deceased, after he was left in the prisoner's company. Such a symptom is strikingly indicative of the apoplectic state ; and as to the caseous, or cheese-like substance found in the stomach, if it proves any thing, it can only be that the deceased had eaten something besides the animal food of which he partook on returning home.

“ It has further been reported (though such report does not appear to form part of the authenticated statement of the medical gentlemen who examined the body), that the clothes of the deceased were *saturated with urine* ; but

nothing could be more preposterous than to infer from this circumstance that violence had been used to the bladder, or even any pressure applied to the lower part of the belly, where, in a distended state, the urinary bladder, or part of it, (more properly speaking,) would lie. Without taking into account the possible existence of disease in the urinary organs, no fact is more familiar than that of persons, under the influence of excessive intoxication, voiding their urine unconsciously. Even a slight disposition to do so would be increased by the ingestion of spirits diluted with water; and when the circumstances are taken into consideration of the deceased having a rupture on either side, and of the irregular action of part of the apparatus worn by him in consequence of this severe infirmity,—of the posture, neglect, and, indeed, of every thing unfavourable to decency and comfort,—no importance whatever can be attached to the fact of the urine having been found even high up. It is a circumstance that will admit of explanation in a variety of ways, by far the least intelligible or conceivable of which, is the application of pressure over the region of the bladder.

“ QUESTIONS [A*]

“ *To be put to the Medical Witnesses for the Crown, on their Cross-examination, or to those in behalf of the Prisoner, as Counsel may think fit.*

“ Is not pressure upon any part of the brain considered very dangerous?

* All these questions, which were handed to counsel before the trial, and some others, which suggested themselves to me during Dr. Dennis's examination, were put by Mr. Clarkson to this witness.

“ Will not tumours cause pressure, and do they not tend to impede the free circulation of the blood in the brain ?

“ If it were known, or suspected, during the life of a person, that he had tumours in any part of that organ, would he not be considered predisposed to apoplexy ?

“ Is not extravasation of blood upon the surface of the brain a well-known cause of apoplexy ?

“ Is the effusion of lymph between the membranes of the brain likely to take place from suffocation ? or is it not the consequence of disease in the parts where such effusion takes place ?

“ Would not a person believed to labour under predisposition to disorders of the brain in general, and to apoplexy in particular, be enjoined to live abstemiously, and especially to avoid the use of strong liquor ?

“ Would not the circumstance of such a person becoming intoxicated be looked upon as the probable cause of apoplexy, were that disease to take place while he was under the influence of strong liquor ?

“ Is it not a general conclusion, that a person in an excessive state of intoxication is exposed, among other dangers, to that of apoplexy ?

“ Will it not favour the access of this disease if there are ligatures on *any* part of the body, particularly about the belly, whereby pressure will be caused on the largest blood-vessels in the system ?

“ Will not violence, such as a fall, favour a tendency to irregularity in the circulation, and more especially in the brain, there being already in that soft organ a departure from the healthy structure ?

“ What would be the proper and judicious course to

pursue with a person in a state of intoxication, for his safety, and more especially with a view to prevent the occurrence of apoplexy?

“ Would it not be EXTREMELY dangerous to let him go to sleep upon a floor, with his head low, and a herniary truss fastened in the usual manner ?

“ Are the appearances described as having been found in the body such as would lead to the conclusion that the deceased died by *suffocation* rather than *apoplexy*, or the reverse ?

“ What would be the most remarkable appearances discovered on opening the body of a person who had been *stified* or *suffocated* ?

“ Were not some of those appearances absent in the body of the deceased, and were not almost all the ordinary signs of death by apoplexy discovered ?

“ Is not *snoring*, as unprofessional people would call it, a characteristic symptom of apoplexy in those who have not been known to snore when in their ordinary state ?”

ADDITIONAL PARTICULARS RELATING TO THE CASE OF BUTLER.

“ The narrative contained in the last Number of *The Lancet* ought perhaps to have included the following particulars ; but my object in drawing it up was conciseness. Its insertion, and the interest which it has excited, call for further disclosures. I never saw the worthy sheriff till I waited upon him at the time already mentioned. I believe the soldier to be a bad character, and that the conviction

which afterwards took place as to the robbery was merited by his general conduct. In consequence, however, of the verdict, I can offer no private opinion as to the larceny part of the business ; but it obviously arose out of intoxication—a circumstance which, in the eye of the law, is no excuse for criminal *acts*, whatever it may be, in morals, as to *intention*.

“ On the morning of the trial, I sought another interview with the sheriff, to whom, in presence of the rev. ordinary, I stated that it was impossible to foresee what the result of this deeply important investigation might be ; but that no verdict of a jury would alter my view of the *professional* merits of the case ; so that, in the event of conviction, I should proceed to draw up an application to the proper quarter, which I was confident a vast majority of my professional brethren would sign. The sheriff pledged himself to be the medium of communication with government should such a measure be found necessary ; upon which Mr. Cotton expressed a hope, that the medical witnesses would take care what they said, for a man charged with rape had been convicted, because two practitioners gave evidence that they found LACERATION in the female. When *it was too late*, they declared that they meant to have said ULCERATION—a word that would have saved the convict ! My reply was nearly as follows :— ‘ We have got all the medical jurists in London here, who are not persons likely to speak unadvisedly ; but as I shall take my seat by the prisoner’s counsel, and watch every word that may be given in evidence, you may depend upon it the medical men shall say *what they mean*.’

“ The lecturer on medical jurisprudence alluded to in ‘ *the case* ’ published last week, is Dr. Wilmot. I am the

more anxious that this should be known, as I never saw that gentleman till we met on this business, and as the publication of the fact may serve to shew that there is a right feeling on either side. Let me conclude by adding, that Dr. James Johnson's conduct on this agitating occasion ought to ensure him the most honourable mention, even in *The Lancet*.

“ April 18th, 1829.”

*Case of M'Fadyen, tried for Murder, by an attempt to procure Abortion, as related in the Introductory Lecture, delivered in the University of London, May 11, 1829, BY THE AUTHOR.**

“ AN unmarried female proved with child, and died under circumstances which gave occasion for a coroner's inquest; in the course of which, evidence was given by a person calling himself a surgeon, that she had been destroyed by attempts to procure abortion,—embracing, therefore, two very heinous crimes, of which one amounted to murder. For perpetrating this murder, a medical man and a female friend of the deceased were committed for trial. The surgeon aforesaid had visited the deceased previous to her death, and administered remedies (one of which was copious evacuation of blood, when the woman seemed, from his own account, to be *in articulo mortis*). He afterwards, in the presence of his shop-boy, opened the body; and having done so, drew up a formal report of the

* The Lecture has been published by Mr. Taylor, 30, Upper Gower-street.

appearances, the statements in which satisfied the parties who held the inquest (which, by the way, was afterwards quashed as an illegal proceeding altogether), and the prisoners were committed on the coroner's warrant. In this report, and in the oral testimony given by its author, it was alleged that savine and rue had been administered to the deceased; and that '*a dreadful operation*'—(these were the words)—had been attempted, in consequence whereof she died. This document had the advantage of being read in open court by the writer himself; and being present, I had the felicity of inspecting the original. Of its literary pretensions I shall say nothing; but such medical nonsense could only be paralleled by the other statement, upon which the merits of the case first mentioned hinged. The question of the savine and the rue was very speedily disposed of by the admission of this witness, that he had not been able to identify them; and we all know that if any effect is to be relied upon, they must be given in large quantities; while even then the primary effect will not be that of producing abortion. The affair was thus left to hang upon the '*dreadful operation.*' The performance of this was inferred in a most curious manner, which I hope I shall be able to make you all understand. Although the witness admitted that he had drawn his conclusions more from '*what he had heard than what he had seen*' on the occasion, his observations ought not to escape exposure.

"They were recorded both negatively and positively, for he stated that 'he examined most particularly, and could not discover any catheter or instrument to draw off the water had been passed, or previously introduced.' Here is an inference indeed—much such a one as would be made by a man, who, after looking 'most particularly'

over London bridge, would say that he could not discover [that] ‘*any wherry or other boat had passed through the centre arch three or four days before.*’ But on one side of the womb there were indentations *as if made by a blunt instrument in the first instance*; and on the other there were ‘*five distinct punctures made by a sharp instrument!*’ Notwithstanding all this, however, there had been no ABORTION, the uterus having been found with its entire peculiar contents, as would be the case at the stage of pregnancy to which the unfortunate woman had advanced.

“ Now, let me appeal to every medical man here or elsewhere, whether, if abortion be undertaken to be procured by a person of scientific skill, through the means alleged, there is any risk of failure? Society is more indebted to our caution and integrity than they are aware of. In this case, however, there was no trace of any such interference; and whether the woman died of inflammation excited by the administration of powerful drugs, by unskilful treatment, or other improper management, it is clear that no attack had been made upon the ovum. But this is not all, the uterus itself having been removed from the body and preserved in spirits, was produced in court, and submitted to the inspection of eminent medical men, who declared that the alleged wounds or punctures were merely the openings of natural ducts belonging to the organ, which presented exactly the appearances that would be found in any impregnated uterus at the same period of gestation.

“ I apprehend, gentlemen, I have said enough to rouse even your *indignation*; and I will not affect to conceal that I felt no ordinary, and do still feel considerable exultation at these triumphant victories of skill and science over ignorance and presumption. The matter was the more

satisfactory,—perhaps I may say even brilliant,—as the discomfited parties were reduced to the necessity of confuting themselves. I have little hesitation in saying, that had the original depositions in these cases been allowed to take their course in a way of which, it is to be feared, there have been too many examples, three innocent persons would have been doomed to, and no doubt must have suffered, an ignominious death,—for which the errors of medical men would have been justly held responsible. The awful nature of the consequences, it would not be for me to depict, if I could; but the first would have been the raising of the public voice about the errors, and the next, universal indignation to the end of time. For my own part, I have felt it my duty to lay very strong statements on these occurrences before his Majesty's government, which have been received in a satisfactory manner, and of the results of which I have little doubt the public will in due time have the benefit. One of these persecuted and innocent individuals has been here to express his thanks, and is now in this theatre—*a living and a grateful man, instead of lying a dismembered corpse on the table of the anatomist*. But we require no thanks; we want to do good, by extinguishing error, banishing prejudice and ignorance, and raising truth, knowledge, and common sense, to their proper level."

Case of FENNING.

IT may not be uninteresting to those for whose use this volume has been drawn up, to record the principal circum-

stances which led to this young woman's trial, conviction, and execution, at the Old Bailey in 1815, as well as the course pursued by the author on several public occasions, and in the presence of hundreds likely to sit as jurymen, to disprove certain important parts of the evidence given against her, and thereby furnish them with a caution which might have a salutary effect on similar occasions.

ELIZABETH FENNING, at the time mentioned, was cook in the family of a law-stationer in Chancery-lane, where (shortly after some trifling dispute between her mistress and herself) several persons, including Fenning, were poisoned, in all probability by *arsenic*, introduced into certain yeast dumplings, the preparation of which formed part of this girl's duty. None of them, however, died of the poison.

Medical aid was called in, and the method of *treatment* has been laid before the profession by one of the parties,* upon which we have no animadversions to offer; but the method pursued in the *detection* of the poison was, to say the least of it, loose, and exposed to great doubt and contradiction. This part of the business was shortly afterwards commented upon with great force,† and will now stand for ever in the list of medical errors.

We shall concede the fact that arsenic had been taken. The question really was, *who* introduced it into the dumplings? and the evidence did not go to bring this home to the prisoner.‡

* See "Remarks on Arsenic," &c. by John Marshall, member of the Royal College of Surgeons in London, and apothecary to His Royal Highness the Duke of Gloucester's household, &c. 1817.

† In a volume entitled, "The Important Results of an elaborate Investigation into the Mysterious Case of Elizabeth Fenning," &c. By John Watkins, LL.D. 1815.

‡ After the above was committed to the press, the author's attention was called to the following article in the newspapers. A correspondent

However, the principal circumstance upon which she was convicted appears to have been the *blackening of one of the knives* used at dinner, which was sworn by a witness, who partook of the dinner, to have been caused by cutting the dumplings; and the medical witness for the prosecution being asked, if "*arsenic cut with a knife* would produce the *appearance of blackness upon the knife?*" replied, "I HAVE NO DOUBT OF IT."*

In a work published by the author of the present one, containing the medical evidence given upon about forty important trials,† the case now mentioned has been gone into at some length. A medical gentleman, with whom I had not the pleasure of being acquainted at the time, upon seeing the work, wrote to me, stating that he was the individual who made certain experiments, confuting the opinion given by the medical witness;‡ that he had been constantly with the poor girl, from the time of

in the "Morning Journal" of Monday, under the signature of John Grant, says, "I am assured that a son of Orlibar Turner (of Chancery-lane) has recently died miserable in Ipswich workhouse, confessing 'THAT HE PUT ARSENIC INTO SOME YEAST DUMPLINGS TO POISON HIS FAMILY, AND FOR WHICH CRIME ELIZA FENNING WAS HANGED INNOCENTLY.' It may be remembered that it was proved on the trial that the poor girl was very ill from having partaken of the dumplings (which was considered by many a strong proof of her innocence), and persisted to the last that she had not committed the crime for which she was about to suffer. The then recorder (Sir J. Sylvester) thought differently; and a numerously signed petition in her favour, expressing doubts of her guilt, and recommending her to mercy, was ineffectual." — (*From the Weekly Dispatch, Sunday, May 24, 1829.*)

The *striking* article in the "Morning Journal," upon which the above extract is founded, is worthy of perusal, but not exactly suited for insertion here.

* See the trial, as reported in Watkins's "Account," already referred to.

† See "Analysis of Medical Evidence," page 207.

‡ An account of which experiments was forwarded to Lord Sidmouth, then Secretary of State for the Home Department. See *Watkins*, p. 69.

her condemnation till she ascended the scaffold ; that he was convinced of her innocence, and that I had his permission to give his name in future editions of my work. I made it my business to see this gentleman, and he informed me that there had been a knife blackened on the occasion, not by *arsenic*, but by *pickled walnuts*, which formed part of the dinner, but to which no allusion whatever was made on the trial.

Some time afterwards I went over the circumstances of this case in a lecture given at the Royal Institution of Great Britain ; but I apprehend that I performed the same duty in a more striking and satisfactory manner at the London Mechanics' Institution, as follows :—

Having read from the pamphlet of Dr. Watkins all the medical, together with some parts of the other evidence ; and having made such comments as suggested themselves, I concluded nearly in these words :—

“Ten hours have elapsed since I locked up in the box you see on the table the following articles : an intensely saturated solution of arsenic in distilled water—a plain yeast dumpling—one containing more than 1000 grains of arsenic—and a plate of pickled walnuts*—in each of which articles I placed a bright steel knife, such as is commonly used for dinner purposes, in the presence of your secretary and two other witnesses. There has been abundance of time for the arsenic or other substance to exert its fullest action on the steel. The key has been out of my custody ever since, and things have remained undisturbed till the present moment. I now proceed to open the box ;

* I had previously exhibited and read the letter received from the author of the experiments, which I will never part with. It is *every way* valuable, for it was franked by his late Royal Highness the Duke of York.

and if upon the three knives which have not touched the walnuts you find any blackness, I will forfeit all my pretensions, leave this theatre, and be seen by you no more."

The box being unlocked, the first thing taken out was the solution, with the blade of the knife in it; this being removed was found, instead of being blackened, to be whitened, the solution in cooling having thrown down part of the white oxide of arsenic.

We next inspected the uncontaminated dumpling, in which the knife had been left sticking since they were both placed in the box. There was a little *rust* where the moisture had oozed from the dumpling, but no blackening.

Precisely the same appearance was shewn on the knife which had in a similar way been placed in the poisoned dumpling — there was no *blackening*.

Lastly came a knife which had cut a pickled walnut. It was black enough. They were all handed round the assembly, and nothing could be more satisfactorily demonstrative.

THE END.

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